

Emily Kumler: I'm Emily Kumler and this is Empowered Health. This week on Empowered Health. We're going to talk about what is in our food and what is in our food supply. And we spent a lot of time talking about macronutrients or ingredients or you know, the right kinds of food to eat. But this week we're actually gonna talk about something different. My guest this week is a brilliant investigative reporter who generally we wouldn't think would be on this podcast cause she's not focused on women's health. But I thought it was important to have her on because so many of us are buying food for our children and we're even planting gardens hoping to grow better food for our families or ourselves. She's going to sort of explain to us some of the things that we need to be aware of because in her work she started out as a, you know, reporter who was basically just assigned the agricultural beat and that, because she's wicked smart, led to her doing a deep dive into the chemicals involved in our agricultural economy. And that has led her to some profound findings into the chemicals that are used basically across the board, whether it's [Roundup](#)¹ in your backyard or it's more sort of serious chemicals that are used on massive farms and the sort of political pressure and financial pressure put on people to, you know, not sort of expose the dangers behind these chemicals. And I'm not going to get into all the details in the intro, but this week we're going to talk to [Carey Gillam](#)² who is the preeminent investigative journalists when it comes to questions of what is in our food, in terms of the chemicals that are used to grow our food and what is probably laced in the soil of my own backyard.

Carey Gillam: I'm Carey Gillam. I'm a journalist. I spent most of my career with Reuters international news agency. I have written [one book](#)³ and I'm working on my second and I do research now for the nonprofit group [U.S. Right To Know](#)⁴.

Emily Kumler: We are excited to have you on and I want to make sure that this is a conversation where you kind of take it wherever you want to go because I feel like you've done a lot of really interesting work looking at pesticides and sort of the influence of environmental toxins, which for our audience, which is, you know, a female audience of people who are really trying to navigate the health landscape, I feel like one of the things I'm excited to sort of get into with you is that there's a lot of controversy around this and part of the controversy seems to be like nobody really, I mean everybody's on one side or another, but it's sort of hard to be on the side of pesticides. Right? But I also think one of the things that I'm interested in personally, and I'm sure our audience will be too, is like how do you avoid this stuff? So I just want to

¹ <https://www.roundup.com/en-us>

² <https://careygillam.com/>

³ <https://careygillam.com/book>

⁴ <https://usrtk.org/>

kind of cover the range. So why don't we start by having you talk a little bit about how you got on this beat in the first place?

Carey Gillam: Yeah. So, gosh, it's a long time ago. 1998, I was a journalist. I was writing about the banking industry, didn't really know anything about pesticides necessarily, but Reuters assigned me to move to Kansas. I was living in Atlanta at the time and they assigned me to move to Kansas and [start writing about food and farming and agriculture](#)⁵ and these really big companies like [Monsanto](#)⁶ and [Dow and DuPont](#)⁷ and [Syngenta](#)⁸ who were sort of revolutionizing agriculture and food production through, you know, use of pesticides, agrochemicals, these are fungicides, insecticides, herbicides, things that farmers can use in their fields to help grow the food that we eat. And of course, pesticides are used by homeowners and you know, in many other ways around the world. But a very big use that impacts all of us is in agriculture because of course we all eat. So I had to learn a lot about the very big business of agrochemicals, which meant I had to learn the science of these various types of chemicals, these pesticides. And I had to learn, you know, how they work in the field and how they're regulated and what they mean when they are used, you know, in farming and they do leave then residues of these chemicals in the food that we consume, what it means for our health. You know, it's a very big topic and I've been writing about it and covering it now for 20 some years. You know, it's fascinating. And it's also just a really, really important topic because what we know through the science as it's developed is that, you know, pesticide exposure either, you know, in the field what they would call occupational, but dietary is really, really impactful on human health and particularly on children and people who are particularly vulnerable, maybe the elderly or people who have other sort of health problems already. So, you know, it's a very big important topic, at least in my opinion. And I guess I've become, my husband and I joke about it, you know, when I die and you wonder what to put on my tombstone, it'll be, you know, she knew a lot about pesticides.

Emily Kumler: It's what every girl wants. Right.

Carey Gillam: Exactly.

Emily Kumler: So one of the things that I feel like we should just kind of dive right into is this idea that when these chemicals are put on crops to prevent insects or as you were saying as like fungicides or what would be seem to be like sort of preventative measures from bad insects or bad things

⁵ <https://careygillam.com/articles>

⁶ <https://monsanto.com/>

⁷ <https://www.dupont.com/news/dowdupont-completes-spin-off-of-dowinc.html>

⁸ <https://www.syngenta.com/>

getting in and preventing the crop from growing properly where it could then be sold. I mean, I feel like in some ways like that makes a lot of sense, right? Like anybody who has a garden is probably familiar with some of these products that you put on in order to prevent, you know, the animals or the bacteria or whatever getting to the plants before you can get to them. Right? Like, we spray our roses with stuff. So it's not crazy to think this stuff gets into the soil. It gets into the plants and that like these are not natural compounds, right? So it's not like the body necessarily knows how to process them. But what I think is really interesting is this idea that, especially for nursing moms, that it can come through in the breast milk and that it also, it's been found in urine. And so can you just talk a little bit about like what is the biological process that happens when somebody ingests this stuff? Because the chemical companies will say it's incredibly safe and like you can drink it and it's fine and there's no harm done. You seem to think to the contrary.

Carey Gillam: Well, right. I mean I think it's not black and white, you know, and risk is relative and you know what is acceptable for one person may not be acceptable for another. And different pesticides have different impacts, right? And different exposures have different impacts. So I think to say, you know, all pesticides are safe is ridiculous, you know, and to say all pesticides will kill us, you know, is probably ridiculous as well. So, but I think the nuance is important and what I write about in my book "Whitewash" is really sort of a hearkening back to the lessons that [Rachel Carson](https://www.rachelcarson.org/)⁹ tried to put forward, you know, in the fifties that indiscriminate use of pesticides, when we don't appreciate the risk, can be profoundly dangerous for our environment. You know, for species, for the health of the soil, the health of water and air that we all need to survive and also profoundly dangerous for human health. So to get back to sort of your question, [glyphosate](https://www.epa.gov/ingredients-used-pesticide-products/glyphosate)¹⁰ is one particular pesticide that I've written a lot about. This is an herbicide, a weed killer. It's the most widely used weed killer in the world. Many people may actually be familiar with it because it's used in Roundup herbicide. Many people know that. Many people might have that in your garage. Right. It's been highly controversial over the last several years because the science developed to the degree that it was [classified as a probable human carcinogen in 2015](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(15)70134-8/fulltext)¹¹ and that created a lot of, you know, chaos around the world and [different](https://www.theguardian.com/environment/2019/sep/04/germany-ban-glyphosate-weedkiller-by-2023)¹² [countries](https://www.wsj.com/articles/austrian-herbicide-ban-adds-to-problems-for-roundup-owner-bayer-11562087770)¹³ are looking at

⁹ <https://www.rachelcarson.org/>

¹⁰ <https://www.epa.gov/ingredients-used-pesticide-products/glyphosate>

¹¹ [https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(15\)70134-8/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(15)70134-8/fulltext)

¹² <https://www.theguardian.com/environment/2019/sep/04/germany-ban-glyphosate-weedkiller-by-2023>

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<https://www.wsj.com/articles/austrian-herbicide-ban-adds-to-problems-for-roundup-owner-bayer-11562087770>

potentially banning it and [cities](#)¹⁴ and [school districts](#)¹⁵ and things and people are trying to make sure it's not in their food. And so there's been a swell in testing and it has been found that [glyphosate residues are found in our oatmeal](#)¹⁶ and in [honey products](#)¹⁷ (*Editor's Note: Internal email released by FDA*) and different cereal and [beer and wine](#)¹⁸ and [human urine](#)¹⁹. It's very common to have this widely used chemical in your urine sample if you have that tested. Found in your [blood serum](#)²⁰. And there have [been](#)²¹ [mixed](#)²² [results](#)²³ of testing to say that it is in, can be found in breast milk. Now the companies that sell these chemicals and sell glyphosate will say, you know, it doesn't build up in the body. It's processed very quickly through feces and through urine. It's nothing to worry about. You know, other scientists who don't work for the companies, many of them say, you know, actually we're finding that it does persist in the body quite longer and that it, you know, it's persisting. It's affecting our body in different ways. There's [some science](#)²⁴ that shows that this particular chemical affects the gut microbiome in a negative way, which, you know, then screws up all sorts of things in your body if your gut microbiome is not healthy and in sync. So you know, and that's just one. This is glyphosate. There's another pesticide called [Chlorpyrifos](#)²⁵, which is an insecticide that was sold, has been sold by Dow chemical, which is no longer Dow chemical, they merged into DuPont. And you know, all sorts of things there. But, Chlorpyrifos is found [pretty commonly a lot of times in fruits and vegetables](#)²⁶, which we would think are very healthy to give to our children. Chlorpyrifos is known to be [so very damaging to children](#),²⁷ particularly for their neurological development

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<https://www.citylab.com/environment/2019/10/glyphosate-pesticide-cancer-roundup-lawsuit-bayer-monstanto/598537/>

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<https://sanfrancisco.cbslocal.com/2019/06/24/east-bay-school-district-bans-chemical-found-in-roundup-weed-killer/>

16 <https://www.ewg.org/childrenshealth/glyphosateincereal/#.W3XNdnwnYd4>

17 <http://usrtk.org/wp-content/uploads/2016/09/FDAblankhoney.pdf> - Internal email

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https://uspirg.org/sites/pirg/files/reports/WEB_CAP_Glyphosate-pesticide-beer-and-wine_REPORT_022619.pdf

19 <https://detoxproject.org/1321-2/>

20 <https://www.ncbi.nlm.nih.gov/pubmed/21338670>

21

22 <https://pubs.acs.org/doi/abs/10.1021/acs.jafc.5b05852>

23 <https://academic.oup.com/ajcn/article/103/5/1285/4633910>

24 <https://www.biorxiv.org/content/10.1101/870105v1>

25 <https://www.epa.gov/ingredients-used-pesticide-products/chlorpyrifos>

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https://www.pan-europe.info/sites/pan-europe.info/files/June%202019%20-%20PAN%20HEAL%20Briefing%20chlorpyrifos_web.pdf

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https://www.sierraclub.org/sites/www.sierraclub.org/files/program/documents/1615%20Kids%20and%20Chlorpyrifos%2003_web.pdf

that it is, is being banned. It was supposed to be banned in 2017. It was [banned from household use](#)²⁸ many, many years ago to try to protect children. But a couple of years ago the EPA said this is actually so dangerous in even dietary very, very minuscule dietary exposures. We can no longer say that it's safe in food and water and it must be banned from agricultural use so that it won't show up in food. And it was scheduled to go into a ban 2017. Trump of course came into office. We had a new administration, a new EPA oversight, and [the ban has been put on hold](#).²⁹ So Chlorpyrifos is still being used in our food. So, those are just a couple of examples and there are literally hundreds of pesticides that are used in food and farming and that our government understands and expects will leave residues in the foods that were serving our families every day. So, you know, it's definitely something that I think is important and is worth understanding and talking about.

Emily Kumler: We talk a lot about, we have an episode actually coming up that's all about like sort of like supplements that are unregulated. And what we heard was that the FTC is actually expecting people to self report when they have a terrible reaction to some supplement that was some Instagram influencer recommended for whatever ailment because they are basically so overwhelmed with, you know, sort of trying to monitor social media and all of this stuff that they can't handle it. And I think they're, you know, I don't think that that's like an off the record kind of comment. I think that that's just the state of things. But what's interesting to me is that this feels a little bit like the other end of the spectrum where it's like, if this is well known and a former EPA, you know, administration or whatever, I mean, we know the EPA has been somewhat slashed right in the last couple of years in that a lot of stuff that was considered to be, you know, sort of, you don't want to say like right or wrong, but more liberal leaning has now been put on hold or canceled. Is that part of this or, I mean like in some ways it sort of seems very clearly like big business wins out over the individual consumer's health. But that's an oversimplification, right? Or is it not.

Carey Gillam: You know, probably not, but it's certainly not partisan. This didn't just happen with Trump, this isn't just a Republican dynamic. I've studied regulatory documents primarily through our EPA, which regulates pesticides. I've done a lot of Freedom of Information Act request from our Food and Drug Administration, U.S. Department of Agriculture and the EPA. I've actually sued the [EPA twice so far to get them to comply with turning over documents](#).³⁰ I've also studied thousands of pages of archived EPA documents going back to the 80s. So, you know, you can very clearly see regulation of pesticides and the

²⁸ <https://www.epa.gov/ingredients-used-pesticide-products/chlorpyrifos>

²⁹ <https://www.regulations.gov/document?D=EPA-HQ-OPP-2007-1005-0100>

³⁰ <https://usrtk.org/wp-content/uploads/2016/09/FOIA-complaint-vs-EPA.pdf>

ones I just mentioned and many, many more. You know, it's not partisan. It's sort of indoctrinated into our system, which is one in which we have political appointees essentially overseeing these regulatory agencies. And our political process allows for, you know, the corporation to become much more of a priority over, you know, Mr. Smith standing, you know, at home just, the individual through, you know, corporate campaign contributions and just the lobbying, and the millions and millions of dollars that are spent. It's no wonder that the company's interests are put above, you know, private interest. And that's what we've certainly seen with regulation and pesticides. I personally think it's gotten a lot worse under Trump. But it certainly was not a perfect system well before that. You know, when you talk about pesticide residues in foods, for instance, the levels that are allowed that are considered to be legal are really suggested and put forward by the companies that are selling the pesticides. And you know, that seems remarkable, but that's the way it works.

Emily Kumler: So there's no, I mean I feel like this is, again, it's like, so there's sort of idea of self regulation or like, I mean in some ways it's almost like the lack of science. I mean, it's like no one's really being critical of themselves if it's their own products that they're then selling and there's no counterbalance to come in as an unbiased authority and test. Is that correct?

Carey Gillam: Exactly. Very little. The companies that are selling the products, of course they are the entities that have the most vested interest. And so they're the ones who are spending so much money to do tests and to present to the regulator, to the EPA, the testing that the EPA requires. I mean the EPA does require some very rigorous tests to be done on these pesticides, but it's the registrars, it's the company selling them. They're paying for and doing these tests to a certain degree. And so they hand them over. And we have found just through sort of data analysis that if a study is funded by a company who has a vested interest in the end result, the end result more often than not favors the safety of the product they're trying to sell.

Emily Kumler: Which is like not a, it's like a very logical conclusion. Right?

Carey Gillam: Yeah, of course. Right. And so like for instance, with this glyphosate, the majority of the studies that are done by the companies they're selling it find that there's nothing to worry about. The majority of the studies that have been done by independent scientists find that there is a lot to worry about. And so the regulator relies more on the ones that the companies provide than they do the independent science. And it's you know, just the nature of the beast. They're working with these companies to get through the registration process. So they, the companies are very involved and we actually see where the companies oftentimes... This happened with glyphosate. One of the very early studies in the 80s was presented to the EPA and [the EPA scientists said](#).

[wow, Monsanto this looks like it causes cancer](#)³¹. And Monsanto said, no, no, you're just not, you're not assessing the study results correctly. Let us tell you how to assess the results. And the toxicologist at EPA came back and said, no, you're wrong. And this turned into sort of a years long battle between the scientists, the working grunts in the science department at EPA and Monsanto and Monsanto eventually prevailed by calling on their political appointees and their power and their influence. So you see that sort of thing play out as well.

Emily Kumler: I feel like the analogy that immediately pops to mind is like you look at something like Iran and like [enriched uranium](#)³², right? And like we don't say we're going to just let Iran self report if they're enriching uranium, right? Like you have a UN team that will go in and sort of look for signs that this is happening or that it's happening too fast or that, you know, I mean, I feel like in any other environment, I mean not when it comes to nutrition, right? So we know that this is sort of, this does seem to be a little bit of like a wild West area for all of us where you sort of think there's science or there's some pretense that there's scientific work happening and then you realize that there are these sort of, I don't know, counter efforts to rig the results and not to be like conspiracy theory, but like that's never a good situation. If you're trying to really get an accurate answer, you need to have an outside team that's doesn't have any stakes in the game, go in and rigorously test and measure what is actually happening.

Carey Gillam: Exactly. And we don't have that in the U.S. Regulatory system and you don't really have that in the European system. And it, you know, it comes down to really resources and funding. You know, it's a very expensive longterm endeavor and we don't do that. That's not the way our regulatory system functions currently. Now we do have, when it comes to cancer because cancer is such a concern, the World Health Organization does have what is called the [International Agency for Research on Cancer](#)³³, which the primary goal of the IARC group, as we call it, is to analyze widely used substances that people are going to be exposed to and to look at the literature and to really do a deep dive and give a classification. Does this cause cancer? Does it probably cause cancer, is it not likely, you know, to help inform that regulatory evaluation. And that's what happened in the case with glyphosate is this international agency, group of international independent scientists, did this analysis and said, [yes, this looks like a probable human carcinogen](#)³⁴. And what happened then was the chemical industry led by Monsanto turned out a full fledged assault on these cancer scientists that they had not seen before. And they had analyzed over a thousand different substances. But boy, when

³¹ https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_PC-417300_1-Sep-93.pdf

³² <https://www.nrc.gov/materials/fuel-cycle-fac/ur-enrichment.html>

³³ <https://www.iarc.fr/>

³⁴ [https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(15\)70134-8/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(15)70134-8/fulltext)

they took on this widely used pesticide that you know was worth many billions in annual sales. They just got hammered and they have been, you know, personally attacked. They've had a lot of legal problems come their way. Monsanto and the other chemical industry players were able to push a congressional hearing to look at stripping funding from the cancer group. You know, it's really been a lesson in how powerful the chemical industry is. If you, you know, say anything that's going to hurt their bottom line.

Emily Kumler: Well, which you have certainly done and experienced your own backlash, which I'd love for you to talk a little bit about because I mean, I feel like people don't like maybe understand what a badass you are, but like you really have taken this on. And I mean, like, I feel like you are the leading expert on all of this. And in part, I mean, you mentioned you've been covering for a long time, but I would also say like, you're pretty dogged, right? I mean, like you're not, you don't seem easily intimidated.

Carey Gillam: I'm dogged for sure. Yeah. I don't know how much of a bad ass I am. I'm just sort of a glutton for punishment I guess.

Emily Kumler: No, no, take the bad ass.

Carey Gillam: You know, I didn't set out to, you know, be a bad ass or take on a company or anything. I started covering this beat in 1998 and I started learning all these things and covered it like I cover anything else, you know, you don't just write with the company tells you, you know, you talk to scientists and farmers, you spend time in farm fields and you know, and you talked to, you know agronomists and weed scientists and innovate, you know, I just learned the business and I learned that what the company is were saying wasn't really always what played out on the ground.

Carey Gillam: When did you realize that? You know, pretty early on, within the first couple of years. I mean, for me that's, you know, pretty fast.

Emily Kumler: Well, yeah. And I mean, I think also, you know, given that you were coming from a banking background...

Carey Gillam: Right.

Emily Kumler: I would imagine that they were pretty friendly to you, right? I mean they probably thought you were more interested in their financial success than in the science.

Carey Gillam: Oh my goodness. I mean the way these companies play it is really smart. Yeah. They bring journalists in. I spent a lot of time at the headquarters of Monsanto. I visited the headquarters of DuPont's Pioneer, which was their agricultural unit. They wine you, they dine ya, they bring you in,

they really want you to be their friend and they train you. They have all these programs to train journalists about how to write about, you know, their business and that industry. And if you are writing stories that they like, you know, you're going to get a lot of benefit from that because they're going to give you scoops that's going to make your editor happy. You know, you're going to get access to high level executives that you won't get if they don't like your stories. I mean, there's a lot of petting and feeding of journalists that goes on. And conversely, if you're writing stories that they don't like, there's a very heavy stick. And I saw both sides of that and as I, you know, developed more expertise in my coverage and gotten deeper and got more investigative and started getting, you know, documents and things that showed great levels of deception by Monsanto. Boy did they come after me, you know, and it turned very ugly for a number of years. And there's actually several documents that have come out that shows that they had, you know, game plans for me, to try to discredit me and ruin my career and, you know, make sure my book didn't sell. And you know, they had that spreadsheets.

Emily Kumler: Didn't they have like a code name for you or something? I mean, it was like the project take down Carey.

Carey Gillam: Yes. Well, yeah, the [Cary Gillam book action plan](#)³⁵ and it was part of something called [Project Spruce](#).³⁶

Emily Kumler: That's what I was thinking.

Carey Gillam: And they had a fusion center set up to sort of monitor, you know, my activities and things. I mean they, it's really frightening to a degree when you see the levels that this big, very powerful company that at one point had [15 billion in annual revenues](#)³⁷ before they were acquired a couple of years ago by an even bigger company. But the links that they would go to to try to silence me, they tried to get me fired from Reuters, you know, trying to take out my book. As I said, they have a whole social media stable of trolls that routinely harassed me and you know, try to harass any editors that I work with, that news outlets, Time Magazine, they've gone after editors there who run my stuff. The Guardian, they go after the editors there when they run my stuff. But I'm one person and so we know they're doing it to me. We know they did this to the international cancer scientists. We have more documents that show that they've gone after other scientists, other journalists. It sounds like the crazy conspiracy theory, but we have thousands of pages of documents now that show it's not, this is what they do. This is the playbook, this is how they control what consumers understand. You know, what lawmakers, regulators, they

³⁵ <https://usrtk.org/wp-content/uploads/2019/07/Action-plan-on-Carey-book.pdf>

³⁶ <https://usrtk.org/wp-content/uploads/2019/08/Monsanto-Project-Spruce-Carey-Gillam-1.pdf>

³⁷ https://monsanto.com/app/uploads/2017/12/2017_Monsanto_Annual_Report.pdf

control increasingly the information that is out there. We haven't even talked about the scientific studies that we found out that they were, um, ghost writing, but you know, it's decades of deceptive tactics really to push these pesticides that we're all, you know, eating every day with our daily dinner.

Emily Kumler: Yeah. And I mean, I think just to stay on this point for a second, because I don't think that people understand that like reporters are not usually very well paid, right? This isn't some sort of like ultimate security job, right? Like there's a lot of factors that make you a fragile or like a vulnerable target, I would say. Right. Definitely. So like your relationship with your editors is everything, right? Especially if you're working as a freelancer in some way, you know, and like, you feel like the editor is getting targeted with information, which I'm sure what they're saying is that you're making stuff up right? Or that like you're not telling the truth some capacity. Right.

Carey Gillam: Well, it's hard for them to do that because, I mean, facts are facts. So what was a big thing with, that they would do with me. They can't argue the facts because as I said, you know, you can document the facts, you know, X number of gallons of this or you know, this happened on this day and here's the document that proves it. So what they would do is they would say, oh, she's biased. She's not really a journalist anymore. She's an activist. She's biased, she's reporting all these problems, or she's reporting all these scientific studies. So she's no longer a journalist. And they even, you know, at Reuters would say, I shouldn't quote critics of the company because the company's position was the only valid position. And so if I quoted any critics that was an unfair balance that I was.

Emily Kumler: Wow.

Carey Gillam: Trying to balance something, but it was an unfair balance. You know, as I said, with the book as well, they haven't been able to find any error in this 80,000, you know, word book. So they just sort of [?] she's biased. She's not a real journalist. She's an activist, which I don't know how to be an activist actually. So I'm an advocate. I'm an advocate. I say what I like to say is I'm an advocate for truth and transparency, you know, wherever that may lead.

Emily Kumler: Yeah. And I mean I also think like to be completely straight forward, like it's kind of hard not to take a side on this stuff if you see that a company is, you know, intentionally misleading the public that what they're doing is causing harm, causing cancer. Right. I mean like if you, if you're reporting indicates all that stuff, of course you're going to develop a bias. I mean, right. How could you not? Because...

Carey Gillam: Yes, exactly. And I do have to clarify and make clear and I try to do, I do think there are two different things. I think deception being

deceptive, deceptive tactics using third parties, lied to consumers, engaging, you know, all of these things that are very clearly laid out in documentation. That is one side. And then cancer causing like does something cause cancer or does it cause infertility or does it cause brain development? Like that's not my game. You know, I'm not a trained molecular biologist. You know, I'm not. So that is up to the scientific community to determine and with different chemicals there's different layers of course of scientific consensus. And so like with Chlorpyrifos, there's an overwhelming scientific consensus that this stuff does damage to babies' brains. With glyphosate there's less of a consensus. There's more of a divide in the scientific community around the world is whether or not this causes cancer. There are also different opinions about whether or not it has a harmful reproductive impacts. And there are different studies going on with that. So all of that is still to be worked out and people need to report on that in a fair way. And I do that. But whether or not the company has been lying about the science and has been [ghost writing the science](#)³⁸ and has been collaborating with regulators to stop scientific investigations, we know that happen because we have the documents that show that it happened. So it happened. And that's a fact. And there are two, you see what I'm saying? There are two...

Emily Kumler: Yeah. And I think that's a really important distinction to make. So I'm glad you did. Because I also think with the cancer causing, I mean I feel like even on this podcast, every time cancer comes up, we're always sort of like, it seems like we know like we actually know less than we know, we say we know about cancer in general. Right. And so the idea that we could explicitly say something causes cancer based on a lot of epidemiological reports is also tricky. Right? Cause it's like this is probably not conclusive the way we might want it to be, but it's an area of interest. Right. And we, there is a lot of information to suggest that like the [minority of cancers are genetic and the majority are environmentally](#)³⁹, you know, sort of causing mutations. But I think that's a really important point to make also going to the heart of your own credibility, right? I mean, it's like you're staying in your lane.

Carey Gillam: I'm firmly in my lane and you know, but that's one of the misconceptions that the industry likes to try to put out there. Oh, she's running around saying this causes cancer. Never have done that.

Emily Kumler: Mhm.

³⁸ <https://usrtk.org/monsanto-papers/>

³⁹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2515569/>

Carey Gillam: I was asked to [testify at the European parliament on Monsanto's efforts to protect this chemical glyphosate](#)⁴⁰. They were looking at whether or not to reregister this chemical in Europe and whether or not it should be banned. And they asked me to testify as one of seven, called us experts. The other six were all scientists, you know, and when it was my turn, I was very clear, you know, I'm not weighing in on the science. I'm weighing in on the conduct and the conduct is very clear. And I think that the journalists, you know journalists should really understand that. And consumers to people listening to your podcast should understand... Now it does raise the question, if your product wasn't dangerous, why do you need to be engaging in deceptive tactics? Do you, if it's not, you know, but that's something to riddle out, puzzle out, I suppose at a different point.

Emily Kumler: Well, and so talk a little bit about the sort of ghost writing of the scientific work, and how you figured that out and you know, where does that sort of leave everybody in terms of like understanding the impact of these chemicals?

Carey Gillam: So my work, my book and the articles I've been writing, a lot of them are based on documents and this comes from, as I said earlier, archived EPA documents, FOIA or Freedom of Information Documents that I've obtained from these different agencies through a lot of hassle I have to say. And then these discovery documents and discovery documents are wonderful, magical things that in these lawsuits. So for instance, in the case of Monsanto and glyphosate, [there are a number of people with non-Hodgkin lymphoma who are suing the company](#)⁴¹ and their lawyers have of course engaged in discovery, which is a request that the company court ordered request that the company must comply with turning over certain documents. [And Monsanto has turned over about 15 million pages.](#)⁴²

Emily Kumler: And are they sharing that with you?

Carey Gillam: Now most of those are sealed.

Emily Kumler: Okay.

Carey Gillam: But those that are entered into the court docket, if you live in the court document and scour it, you know, every day, and scrape it and download those documents, you get just a wealth of information. And that's

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<https://usrtk.org/pesticides/carey-gillams-presentation-to-european-parliament-hearing-on-the-monsanto-papers-glyphosate/>

⁴¹ <https://www.baumhedlundlaw.com/toxic-tort-law/monsanto-roundup-lawsuit/>

⁴² <https://usrtk.org/monsanto-roundup-trial-tracker-index/>

what I've done. And that's at this nonprofit U.S. Right To Know. I've put, I don't even, you know, several hundred, maybe over a thousand are up there now.

Emily Kumler: Which we'll link out to because that's a great resource for people.

Carey Gillam: It's been really like, you know, a lot of people have really enjoyed it because I have to, our organization has to pay for those documents through the court docket, but we put them up for free so that other journalists or you know, just consumers or anybody who wants to read them can read them for themselves. But to answer your question, yes, when you put all of those together and you study them and really follow the timeline, that's how you become aware of all that's gone on. And so for the ghost writing for instance, I mean, that wasn't really even rocket science. [Monsanto in their internal emails many, many, many times talk about, okay, we're going to ghost write this](#)⁴³ study. We need a study and we need it to show that our products are not genotoxic. So what we're going to do is we're going to pay some outside independent scientists who look like they don't work for us and their names will be on it and they'll sign off on it. But we'll do the writing. And there are multiple examples with reproductive study, reproductive studies, the carcinogenic studies, genotoxicity issues. And they also talk about it in relation to testing of GMOs, genetically modified seeds and crops. So it seemed like it was, it was a pretty regular thing.

Emily Kumler: And those were then published in peer review journal articles like so they're like scientific literature essentially?

Carey Gillam: Exactly. The idea is that these are published and out there in the literature saying, declaring that these chemicals are safe and look like again they, the idea is that they must look like they come from independent scientists.

Emily Kumler: And I mean I think I have a bias against peer review in general. I sort of think it's like at the heart of what's wrong with science today. But I also feel like it's important to mention, which you know, the listeners may not know that when you're working on a news story, very often you peg it to a new study that came out in a peer reviewed journal article and you do not usually have the time to go back and fact check that peer review journal article. You, and I mean, I feel like I've had some of the best editors maybe in the world, not ever ask me for that. Like it's just assumed, if it's in a peer review journal, it has been made credible. Right. And that therefore it is a source on its own. And I think the more I look into these journals, the more I am profoundly disturbed at their lack of any kind of, what I would consider like journalism

⁴³ <https://usrtk.org/monsanto-papers/>

ethics. And then I sort of have to stop myself because they're not journalists, right? They're scientists. And they're are scientists who are often asked to report their conflicts of interests. And sometimes they do and we know sometimes they don't. Right. So, you know, I mean, I think there's almost like, I've been thinking of actually writing this as a story. It's like there's almost like a supply chain or like the food chain is toxic from the beginning because a lot of these journal articles are, you know, not really great science. Right? And they're not. And there's a lot of the peer review stuff where it's like there's a very small number of people who maybe are in the specialty of, you know, whatever chemical toxicity. And so those are the people who are going to be reviewing it and it's a little bit of a, I scratch your back, you scratch my back. Right. Whereas the job of an editor in journalism is to tell you all the things you got wrong to ask you for more sources to double check everything that you say. That's not how it works. And I mean, I feel like even the business model of the peer reviewed journals is kind of fucked up. It's like you pay to have your work published. You're not paid. Right. The editors aren't paid it. The peer reviewers aren't paid. I mean it's like along the way it, there's no sort of system of accountability. The peer reviewers are anonymous. I mean, so imagine like opening the New York Times and there's no by-lines and there's no masthead, like you don't know who any of these people are? What? Like, that's crazy. And yet we as journalists often take those studies and assume that they're solid. And so if you're thinking of it as like a sort of a counter intelligence effort, it's really smart on behalf of the companies to have somebody write up a study that supports your product or that refutes the sort of criticism that's coming forward from the real scientific community. And say that it's all, you know, that this study has been replicated and nothing has been found. You know, I mean, I think that's really like maybe inside baseball, but it's so important to understand because I think that's where we get so many conflicting reports from.

Carey Gillam: Well, you're exactly right. And, and the example, and I keep going back to Monsanto and glyphosate, I guess, but it's such a good example. It's the poster child, if you will, for this problem. So this ghost written study, one of the ones that Monsanto talked about internally was one that was published in the year 2000 and it was written by three different scientists, William Crows and Monroe and Monroe, and Gary Williamson, Crows whose first name I'm forgetting, Robert maybe. And Monsanto used that and gave it to regulatory agencies around the world and said, look at this really robust in depth study that found man, there is nothing wrong with this chemical. This chemical is great. But you see in the internal Monsanto documents that not only do they talk about ghostwriting it, but they celebrated and they gave out t-shirts to their employees because of all the hard work they did. Putting this giant paper together that was going to be their defense of this chemical for years to come. And I mean, it was a very, very big deal for Monsanto to get this

paper pulled together and ghost written because they knew it would become the bedrock for regulators to approve all of these continued higher uses and residues in our foods and everything. And they did and they were very successful, so...

Emily Kumler: I mean, I feel like regardless of whether you know, these things really cause cancer, there is another part of this, which is like, why is that not fraud?

Carey Gillam: Well, and it should be right. We all would think it would be. But it goes deeper in these journals. I wanted to address what you talked about there. I mean, I think like anything else, it varies from journal to journal and editor to editor. And you know, there's some really robust peer review activity that goes on I think. But there also is what many people might describe as some really corrupt activity. Like I was very surprised to find that [one of the editors of one of the journals was being paid \\$400 an hour in a consulting agreement with one of the chemical companies whose](#)⁴⁴, you know, products the journal was reviewing, right. Should the editor be getting \$400 an hour from that company?

Emily Kumler: Was it disclosed?

Emily Kumler: No, and you know, there's another situation where one of the editors was getting ready to review a study on a product and emails the company and says, hey, somebody submitted this study. Tell me what you think I should say. You know, should that be happening? I don't know. And then we had a...

Emily Kumler: I think you do know.

Carey Gillam: Really blatant example of papers that were written by again, this was Monsanto executives. And they talk, again we have the emails where they're writing them and they're editing and they're drafting. And this one Monsanto scientist is talking about how much work he's doing. It's like so much work. But at the end of the published papers, it actually says neither any Monsanto employee nor any of Monsanto's attorneys reviewed any of these documents before they were published. Like it blatantly says Monsanto, nothing to do with it. Didn't look at any of it before it was published, which was a complete and total lie. Complete and total lie. It was.

Emily Kumler: So have you ever reached out to those players and said like, what were you thinking?

⁴⁴ <https://medicine.tufts.edu/sites/default/files/pub2018RoundupLitigationDiscovery.pdf>

Carey Gillam: Yes, and I've written a lot about, like that last example, we went back to the editors with these documents and said, what were you know, what in the world? It created a whole lot of chaos. The publisher actually ordered the papers to be retracted then. [The editor refused to retract them.](#)⁴⁵ The publisher then left the publishing house. The editor ended up adding a clarification kind of a thing. But you know, it's, those papers are still out there and they're still titled an independent review. It's a very frustrating, you know, thing to have to cover I guess, and to realize that, you know, the, the very powerful interests often win the day, you know.

Emily Kumler: And so let's talk a little bit about the [non Hodgkin's lymphoma](#)⁴⁶, which I feel like is what the court case is about, that's, is that, that's happening right now.

Carey Gillam: Right, yes, yes.

Emily Kumler: But it's also in your book.

Carey Gillam: Right.

Emily Kumler: And it is the point of criticism that we could find basically on the book. And so I feel like it would be great to have you just sort of address that head on. That like there's a doctor whose name is Mary, where is her name. You know who I'm talking about?

Carey Gillam: Mangan.

Emily Kumler: Yeah, [Dr. Mary Mangan](#)⁴⁷ who,

Carey Gillam: One of my favorite trolls.

Emily Kumler: She's one of your favorite trolls, okay, so tell me about her. I mean, [she makes the point](#)⁴⁸ that basically you talk about this flood of pesticides, and that this is, you know, directly related to, or there's a conjunction between that and this increase in non Hodgkin's lymphoma cancer, but that that's not actually seen in the National Cancer Institute numbers.

Carey Gillam: So if you look at the National Cancer Institute numbers, which I would have to pull up here again, it went from, gosh I'd hate to just say

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<https://usrtk.org/monsanto-roundup-trial-tacker/emails-reveal-science-publisher-found-papers-on-herbicide-safety-should-be-retracted-due-to-monsanto-meddling/>

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<https://www.mayoclinic.org/diseases-conditions/non-hodgkins-lymphoma/symptoms-causes/syc-2037568>

47

<https://biofortified.org/author/maryemangan/>

48 <https://biofortified.org/2018/02/hogwash-review-whitewash-carey-gillam/>

this, but the [incidents of non Hodgkin lymphoma](#)⁴⁹ went from sort of a point of about eight in every 100,000 people to about, I think it was now 15 to 16 in every a hundred thousand people. So, over like the 20 year time span that we were talking about. So that's an increase and it just is. So now the levels of non-Hodgkin lymphoma have leveled out in recent years to a certain degree. So now they haven't dropped back down to those earlier levels. I mean, if you Google increase in non-Hodgkin lymphoma and the increase in non Hodgkin lymphoma and particularly in the farmer community have been a very real concern and you know, it's talked about by world cancer and national cancer officials and, you know, the statistics are there. Now they like to, Mary in particular like to try to put other factors things into there and if you level out, you know, eight to 15 isn't really that big of a jump. Eight in a hundred thousand to 15 in a hundred thousand. But it's a jump.

Emily Kumler: Well, yeah. And I was sort of just curious when I was looking up the stats about like you wouldn't expect to see... Like if we take, um, cigarettes as an example, you have to expect that there's like a delay, right? So it's like you wouldn't see the jump immediately. You like, I think pesticides were introduced in like 1974 or 70 something, right? **(Editor's Note: glyphosate was introduced in the 70's but synthetic pesticides date back to the 1940's.)** So you wouldn't expect to see that jump for whatever the average age of the onset of non Hodgkin's lymphoma, [which I think is like in your 50s or 60s.](#)⁵⁰ **(Editor's Note: average age at the time of diagnosis is 39 according to the American Cancer Society.)**

Carey Gillam: It's a very, so, and I should have said this from the outset, I don't, I'm not a believer in you can take one number and you can take one factor and you can say boom correlation is causation. I don't think that at all and I don't make that point in my book. I did make the point that non Hodgkin lymphoma cases had increased over this particular timeframe based upon the exact data that I had. I don't think that proves or disproves, I'm not sure that has anything to do with use of Roundup. There are a lot of other factors in non Hodgkin lymphoma. You know there are a lot of other, other things. I mean the [AIDS epidemic was part of that, you know non Hodgkin lymphoma](#)⁵¹. So and then the decline in AIDS. I mean there's a lot of different things that cause non Hodgkin lymphoma certainly. So you have to take into account all of the different factors if you're going to try to make some causation situation. And that's sort of the job of each lawyer who's representing each plaintiffs, looking at their particular health and their particular exposure. And did they have other risk factors?

⁴⁹ <https://seer.cancer.gov/statfacts/html/nhl.html>

⁵⁰ <https://www.cancer.org/cancer/hodgkin-lymphoma/about/key-statistics.html>

⁵¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2095580/>

Emily Kumler: Mhm.

Carey Gillam: So, you know, it's a red herring I think to try to say oh, she says non Hodgkin lymphoma went up. Well who cares? I mean it did, I'm not sure that that isn't meaningful to whether or not it causes cancer. I'm not trying to prove if it causes cancer or it doesn't cause cancer.

Emily Kumler: Right. Which I think you did a, you know, you did explain that earlier.

Carey Gillam: Yeah. So, but Mary has been an interesting character. She was one in the Monsanto spreadsheet about my book. They talked about how they really wanted to get third party book reviews that were really negative out there and they hope to engage some of their partners. And they have a list of partners. And at one point, this group called [Biofortified has been listed in internal papers as a partner.](#)⁵²

Emily Kumler: Which she is on, she's a member of?

Carey Gillam: Well, you know, it's hard to really understand things, but the negative book review that she wrote, and she's not a book reviewer, so it seemed odd to me that she, you know, review my book. You know, the professional, actual real book reviewer people all had very positive things to say about my book. But yeah no, she spent a lot of time, she called the book review "Hogwash" and put it out there and then all of these different groups.

Emily Kumler: And the book is "Whitewash" right. So that's sort of...

Carey Gillam: Mine is "Whitewash" But, all the different groups that are funded by Monsanto then, you know, shared this negative book review and sort of amplified it and tried to, part of the plan for Monsanto that they wrote down was to try to engineer Google search engine optimization so that when people tried to search for my name or the book that they would get these things that Monsanto wanted you to see rather than, you know, just some general information. And her book review was one of those things that they hope that you will see.

Emily Kumler: Well, right? Because again, it's like going to somebody who has credibility and getting them to say it counts much more than them issuing a press release, right, that says like, we don't agree with this book.

Carey Gillam: Right.

Emily Kumler: You know, I mean I think this is all so strategic and I think again, it's like one of these things where we're all just walking around doing the

⁵² <https://usrtk.org/gmo/biofortified-aids-chemical-industry-pr-lobbying-efforts/>

best we can and we don't understand that there are these pretty sizable efforts behind different entities to, you know, even if it's not to like do harm, right. There's a counter interest and there's very little regulation anymore protecting the individual consumer. And I think that's a lot of what your book highlights for me. It's like every episode I'm like, you need to be your own advocate. And you know, we're mostly talking about health issues directly, but I think what I really like about the way you've approached this problem or issue is to like really be great about providing these documents, like giving people the resources to come to their own conclusions about a lot of this stuff. Right? Like you're saying like, this is what I've found, but check it out for yourself.

Carey Gillam: Exactly. Yes. And I think that's important in anything. I mean, I think that this is why I would be a terrible activist. You know, I'm not ever able and I don't want to have a position where I'm telling somebody what to do. Buy organic food, you know, don't buy this pesticide. Don't do, don't you know, that sort of thing. That's not my interest in and, or my pay grade. I really do think that we all come at every choice in our lives from a different perspective, a different lens, and we have different priorities and we should be encouraged and respected in our decisions and not told what to do. So I'm just simply trying to provide factual information that people can incorporate into their decision making. And it'd be helpful or useful in that way in the world. That's, you know, not a badass that's just trying to be a good person I think. And we all want to do that, right? Be useful in some way. So that's, I don't, I don't think I warrant all of all of the attention and the attacks. But you know, for some reason...

Emily Kumler: Well because you're challenging something. I mean, I think in some ways your work has made me realize like, we have food labels but we don't have any idea, you know, sort of beyond the ingredients or like somebody might advertise that something is organic. But even that, I feel like there's a huge range of what that means. Right. And so it's sort of interesting because there is so much about what's in the soil. I mean, I remember even just very personally wanting to have a vegetable garden and my sister was like, oh you, I'm like, you know, you need to get the [soil tested](#).⁵³ And I was like, what are you talking about? I'm doing it in the backyard. And she was like, no, you want to make sure that it's like, you know, you don't know who was living in the house before or like what was there 40 years ago or what, you know, there could be all kinds of stuff and then you'd want to do like a raised bed. And I was like, I can't plant vegetables in my backyard because I have to worry about... You know. But she's probably right.

Carey Gillam: She's very smart. Yes. She sounds very smart.

⁵³ <https://www.goodhousekeeping.com/home/gardening/a20705682/soil-testing/>

Emily Kumler: She is very smart. I get all my best advice from my little sister, but it's also one of these things where you don't think about like, Oh well who, who lived in our house before us and what did they spray their yard with? Right. I mean it's like these are not things that we, or that I tend to think about, but they're probably worth thinking a little bit about. And I think, you know, you're work really looking at like agro in general. It starts with all of us making good choices or even just raising the concern a little bit of saying like, I want more information.

Carey Gillam: Right? And you know, it was very concerning to me, right cause I have children, I have three children and I really want them to be healthy and I want them to have a healthy future. And so learning about all of this and the pesticide residues in the foods, my boys love to eat strawberries every morning. I want to give them strawberries. [Learning that there can be 20 different pesticide residues, residues of 20 different pesticides found in a bowl of strawberries](#)⁵⁴. You know, that is alarming to me, right? So I want to take an action to either not feed them strawberries, you know, or be sure I seek out organic strawberries or try to figure out if I can grow my own in the, you know, that sort of thing. But yeah, it's just that kind of information that's useful and the soil, as you said, so many people have not been aware and we're just, the science is sort of coming around now to show us how important the health of our soil is to not only the food that we grow in it, but just you know, carbon capture, biodiversity, the bacteria in the soil, like everything. Mother nature kind of has a good system going and we keep screwing around with, you know, we do that at our own jeopardy I think.

Emily Kumler: There's that great documentary that I love that's called the "[Biggest Little Farm](#)"⁵⁵."

Carey Gillam: I have not seen it.

Emily Kumler: And it's basically about this couple. The husband is a photographer or videographer and the wife is, was like a private chef in LA and she always had this dream that they would have a farm and they get a dog and the dog barks all the time. So they have to move out of their little apartment in LA and they decide it's the opportunity to like go raise a bunch of money and buy a farm. And see what they can do. And it's basically I think like seven years of filming and they're determined that it's going to be like organic and they're going to work and it's going to be like a old school farm. Which, you know, you look at the aerial footage that they take of the property they decide to buy. And it's fascinating because you see, it's like next door is this like egg farm and it's like just rows and rows and rows of what looks like, you know, sheds Barnes,

⁵⁴ <https://www.ewg.org/foodnews/summary.php>

⁵⁵ <https://www.biggestlittlefarmmovie.com/>

whatever they are, but just eggs. Right. And then on the other side of them, there's some other sort of like mono crop kind of farm. And they're determined that they're going to have everything. And so they add more animals and they have more problems and they realize, I mean not spoiler alert, but like they realize that the biodiversity is the way to fix the problems and that the more diverse the everything is like the better the soil is. The more, the sort of natural, you know, like food chain or whatever, like the, the animals that they think they have to shoot or that are causing problems are actually taken care of by another predator. As long as they allow that to happen. It's fascinating and a beautiful film. I mean, I feel like for anybody who's interested in any of this stuff or just looking for something to sort of make you think a little bit about how everything is so different now, including our farms and you know, I mean, I sort of feel like the other thing about that is that we have all this information about sort of like veganism being better for the planet. And one of the things that that film unintentionally, I mean, it's not a part of the storyline directly, exposes is like how important animal byproducts are for the soil.

Carey Gillam: Right.

Emily Kumler: And if we get rid of animals because we're not eating them anymore, then the soil is crap.

Carey Gillam: Exactly. No, we need those animals to fertilize. Right. But again, it's sort of everything in balance. You know, let's look at the risks as well as the rewards. You know, the large scale feed lots and animal confinement operations and those sorts of things. You don't know, we're, you know, we're doing a lot of harm with that stuff and you know, maybe we don't need to eat meat, you know, five times a week, that sort of thing. But you're right, you know, you can't, everybody can't be vegan and say this is going to be a good thing for the environment because it doesn't work that way. You have a whole new set of problems. So I think, you know, the way I look at what you're talking about and what I hope everybody understands is balance. You know, it shouldn't be a big deal. It shouldn't be controversial, but we really need balance in our life. We need to understand risks and rewards and we need to be engaged in policies that respect that and reflect that if we want to be protective of public health.

Emily Kumler: Yeah, I couldn't agree with that more. The one last question that I had for you, which I forgot to bring up earlier, was this idea that the chemicals really came about in the 70s are like this mass production or mass use of them. Was there some historic event that is important for people to understand? Like is it just like putting this in the context of like a modern problem I think is one thing, but like what was it about the seventies that brought this about?

Carey Gillam: Well, it wasn't really the 70s. I mean the [EPA was formed in the 1970s](#)⁵⁶, but different chemicals have been brought to market at different times, you know, and repurposed also to a degree. I mean you had a [2,4-D](#)⁵⁷, which was a component of agent orange in you know, in the war. But it has been repurposed to be used as an herbicide. I mean, it was used as a desiccant, you know, to kill foliage and everything in the Vietnam war 2,4-D's part of herbicide that farmers spray on their farms now to kill weeds as well. So, and 2,4-D was from the 60s or the 50s, when it was engaged as an herbicide. I mean, it's been around a really long time. Glyphosate was introduced in the 70s. But the larger picture is that these big chemical companies that were in the industrial chemical business and then were making chemicals for war, For wartime, that was a very big business for them. And when we stop going to war, you know, they needed another thing to, you know, bring in money. And so they approached the agricultural industry and started figuring out the ways that their chemicals could be useful in agriculture and then started marketing them to farmers. So, it is a more modern, you know, 50 some years, 50-60 years to do our farming in this way. You know, traditionally farmers had to work with mother nature, had to rotate crops and had to do things that encouraged sort of more diversity in their fields. And with the advent of these chemicals, what we've seen is a lot of farmers just drop that and come to [monocropping](#)⁵⁸ and just growing the most profitable commodity crop year after year after year after year, which just, you know, is terrible for the soil. It's terrible for everything. And especially [we're growing so much corn](#)⁵⁹ and we're using a lot [nitrates on the corn](#)⁶⁰ and the nitrates polluting the water in the water. You know, it's just, it's this trickle down effect that is just really provided a lot of havoc for public health and environmental health.

Emily Kumler: And so the only way that somebody can avoid this stuff is to sort of be very vigilant about picking organic food or going to a local farm and asking them what they use. I mean, what do you recommend as sort of like the takeaway for people who are now going to be worried about this in a new way?

Carey Gillam: I mean, some people, for some people, they want to grow their own food or grow their own fruits or veggies, right? Organic is a definite option if you want to reduce your pesticide exposure. It's not a perfect system. There are a lot of problems and issues and we, you know, that's a whole nother

⁵⁶ <https://www.epa.gov/history/origins-epa>

⁵⁷ <http://npic.orst.edu/factsheets/24Dgen.html>

⁵⁸ <https://www.dictionary.com/browse/monocropping>

⁵⁹ <https://www.usda.gov/media/blog/2019/07/29/corn-americas-largest-crop-2019>

⁶⁰

<https://agsci.psu.edu/aasl/plant-analysis/at-harvest-corn-silage-nitrate-test/high-nitrate-potential-in-corn-silage>

conversation. But it's definitely a way to reduce your pesticide exposure and getting to know your farmer and are they, what are they using? Yeah, I mean all of these things. Caring more, appreciating more and being more involved in the food that we are nourishing our families with, I think is the answer to that.

Emily Kumler: I'm Emily Kumler and that was Empowered Health. Thanks for joining us. Don't forget to check out our website at empoweredhealthshow.com for all the show notes, links to everything that was mentioned in the episode as well as a chance to sign up for our newsletter and get some extra fun tidbits. See you next week.