

# Testing Shows Substantial Glyphosate in Foods and Population

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

May 26, 2023

## STORY AT-A-GLANCE

- › As food has become increasingly adulterated, contaminated and genetically engineered, the need for laboratory testing has grown
- › HRI Labs is often hired to test foods claiming to be non-GMO, “all natural” and/or organic. Testing often reveals such claims to be untrue. Several Ben & Jerry’s ice cream flavors were recently found to contain glyphosate
- › Grains, legumes and beans typically have the highest levels of glyphosate contamination due to the routine practice of desiccation, where glyphosate is sprayed on the crop shortly before harvest to improve yield
- › HRI Labs has created two glyphosate tests for the public – a water test and an environmental exposure test. The latter will tell you how much glyphosate you have in your system, giving you an indication of the purity of your diet
- › Seventy-six percent of people tested have glyphosate in their system. People who regularly eat nonorganic oats have double the glyphosate of those who don’t. People who regularly eat organic food have glyphosate levels 80% lower than those who rarely eat organic

***Editor’s Note: This article is a reprint. It was originally published October 29, 2017.***

As food has become increasingly adulterated, contaminated and genetically engineered, the need for laboratory testing has exponentially grown. John Fagan, president of Health

Research Institute Labs (HRI Labs), is an expert in this area. As explained by Fagan, HRI Labs "makes the invisible, visible, giving you the ability to see what is in your food and your environment."

Fagan studied biochemistry and molecular biology at Cornell University, where he also got his Ph.D. After doing research for eight years at the National Institutes of Health, he went into academia and conducted cancer research using genetic engineering as a research tool. This experience is ultimately what raised his concerns about genetic engineering, especially as it pertains to food.

As a result, he created the first lab for GMO testing in the U.S., followed by labs in Europe and Japan. He's also trained laboratories in 17 other countries in GMO testing. "What this did was make GMOs visible. Before that testing was there, nobody could tell whether those soybeans, or that corn was genetically engineered or not," Fagan says. "After GMO testing was available, people had a choice."

HRI Labs tests both micronutrients and toxins – the good and the bad. "We feel that the kind of testing we're doing can open a window for you in each of those areas, so you can make better choices about the food you eat, and that you share with your family," he says.

## **Testing Techniques and Equipment**

There are several types of tests that can be done on a **GMO food**. Antigens are one type of test. DNA testing is another. Since DNA is far more stable than proteins, genetically engineered foods, even when highly processed, can be easily identified with DNA testing.

A test commonly used to check DNA is the polymerase chain reaction or PCR test. Because it amplifies the DNA signal, it can detect even a single genetically engineered corn kernel in a bag containing 10,000 or more corn kernels.

The chromatograph linked to a mass spectrometer is another central piece of equipment that HRI uses. It allows you to test for a wide variety of things at very high

sensitivity. Unfortunately, the cost and complexity involved prevents many labs from having this tool.

*"Liquid chromatography is capable of taking a sample of food ... or whatever you're interested in, and fractionating it into hundreds of compounds, separating them out. That is then fed into a mass spectrometer; a machine that measures, ultimately, molecular weight of whatever it's looking at.*

*With that you can detect – at extremely low levels and identify very specifically – almost any natural or unnatural compound ... down to the parts per trillion in many cases. To give you a sense of what that means, 40 parts per trillion, which is [the limit of] detection that we have for some materials, is like if you were to take a single drop of that chemical and dilute it into 20 Olympic swimming pools full of water.*

*That's the extent of dilution required to achieve 40 parts per trillion. This is extreme sensitivity. These [instruments] are like the Teslas of analytical chemistry.*

*[Liquid chromatography linked to a mass spectrometer] is what we use for measuring glyphosate. Because these machines are very expensive, many of the analytical labs out there don't have access to them. Also, because it is very specialized equipment, you need somebody with a Ph.D. in analytical chemistry, or equivalent, to do this kind of testing. What we're doing is ... unique in that way."*

## **The Politics of Food Testing**

One of the reasons we decided to collaborate with HRI Labs in testing our own supplements is because many commercial laboratories used to confirm the purity of raw materials tend to provide distorted or prejudicial information. One of the great benefits of HRI Labs, in my view, is its objectivity and ability to provide accurate data,

thanks to the sensitivity of their equipment. While many labs will claim to be independent, their primary customers are big food companies.

*"They don't want to embarrass [their customers]. They don't want to bring anything to the surface on that level, so they tend to give very superficial numbers," Fagan says. "Typically, they work to thresholds that are established based on politics and convenience, not science and safety.*

*For instance, you can go to the U.S. Food and Drug Administration's (FDA) website, or the U.S. Department of Agriculture's website and they will say, 'Wheat should have less than such and such amount of glyphosate in it.'*

*Glyphosate is ... the most commonly used agrochemical, and it's now been demonstrated to cause cancer, liver and kidney damage and birth defects. You'll find there a number for it, but if you go to the scientific literature you discover that levels [of glyphosate] hundred or a thousand times lower ... are in fact toxic to the system. For that reason, those government established thresholds are not very meaningful."*

This is a point worthy of reiteration: The use of politically-influenced safety thresholds to "prove" a food is safe is pervasive in the food industry. The only thing such safety levels accomplish is generating a false sense of security, which benefits food companies financially. HRI Labs, on the other hand, looks at the available research when establishing their threshold levels.

## **Glyphosate Testing**

One of the toxins HRI Labs is currently focusing on is glyphosate, and the public testing being offered (see below) allows them to compile data on the pervasiveness of this chemical in the food supply.

When I participated in the environmental exposure test a while back, glyphosate was undetectable, which means levels in my system were below 40 parts per trillion, likely

because I eat primarily organic and homegrown foods, and expel toxins I might come in contact with through exercise and regular sauna use.

*"What we're finding is there's quite a range of levels of exposure, but that people who are eating organic generally have much lower levels. Women tend to have, on average, slightly lower levels than men. There are certain behaviors that tend to lead one to have higher levels.*

*For instance, it isn't a super strong correlation, but it appears that if you are a golfer, you're more likely to get exposed, because they use [glyphosate and other pesticides] on golf courses ...*

*The reassuring thing is that if you ... change your diet ... and go to a diet that avoids things that might contain these chemicals, then within a week or two your levels of glyphosate will drop significantly. Glyphosate levels are a good indicator for guiding your dietary choices ... Often people come back to us saying, 'This changed my way of thinking about my diet.' This is a good thing."*

## **Glyphosate Found in Popular Ice Cream Brand**

HRI Labs is often hired to test foods claiming to be non-GMO, "all natural" and/or organic. Unfortunately, many times testing reveals such claims to be untrue. A recent case in point is that of Ben & Jerry's ice cream. HRI Labs' testing revealed their ice cream contains glyphosate. Fagan tells the story:

*"Organic Consumers Association and ... Regeneration Vermont were concerned about what was happening with Ben & Jerry's. They were concerned ... that the dairy producers ... were not even able to get a price for their product that would cover their costs for producing the milk. There was also a concern from people in the state that the dairies were polluting the lakes, and creating problems for the Vermont tourist industry ...*

*They wanted to look into what was going on with the quality of the milk. They sent us samples and we did some really in-depth testing using the very best*

*methods out there.*

*We used triple quadrupole mass spectrometry linked to high pressure liquid chromatography to actually look at the quality of the ingredients in a product. What we found with Ben & Jerry's ice cream was a bit shocking in that it contained substantial levels of glyphosate ...*

*Ten of the 11 flavors we looked at contained measurable amounts of glyphosate, and at least one of them contained levels that, according to most recent research, raised questions about safety. In particular, it had been found that glyphosate at quite low levels – levels considered safe by the Environmental Protection Agency and FDA – ... could actually cause problems like fatty liver disease.*

*As you may know, there's an epidemic of fatty liver disease in America today, and it's linked with things like metabolic syndrome ... Organic Consumers Association has been discussing those results around the country, and discussing with Ben & Jerry's if they could do something about that.*

*The obvious and most logical thing for them to do is to begin to use ingredients that are organic instead of just conventional ingredients, because organic bans the use of things like glyphosate in the production of crops ..."*

## **Substantial Amounts of Glyphosate Found in Many Foods**

HRI Labs has investigated a number of other foods as well, including grains, legumes and beans. Most if not all of these types of crops need to dry in the field before being harvested, and to speed that process, the fields are doused with glyphosate a couple weeks before harvest. As a result of this practice, called desiccation, grain-based products, legumes and beans contain rather substantial amounts of glyphosate.

Quaker Oats,<sup>1</sup> for example, were found to contain very high levels of glyphosate. People who regularly eat nonorganic oats also have elevated levels of the chemical in their urine. "These are the kinds of problems that are coming up out there," Fagan says. "All

that's needed is for the grain producers to change their practices, so that they're not spraying the fields with this weed killer immediately before they harvest it, and it will solve those problems."

Wines also contain surprising amounts of glyphosate. As it turns out, weeds in vineyards are managed by spraying glyphosate, which ends up in the grapes as the roots of the grape vines pick it up through the soil.

*"This testing ... is making something that's been invisible in our food system, visible to us," Fagan says. "[A] vegetable like spinach that you buy in an American grocery store is going to contain, on average, eight different pesticides. That's eight different pesticides, and you're taking it home to feed your family without knowing that's the case ...*

*The reason you aren't able to know that is because the chemical companies have done a really good job lobbying our government so that nobody in the supply chain has to talk about these ... agrochemicals. The farmer doesn't have to talk about them.*

*The brands that are selling products made from those [raw ingredients] don't have to talk about them. The grocery stores don't have to. They've been made invisible in our food system, and that's a big concern.*

*We're doing testing using rigorous methods, the very best methods out there, the most sensitive methods out there, to make these invisible things visible, so that you know more about what's in your food system, and in the foods you're giving to your family. This is so important, because this allows each of us to make better choices about the food they provide to their children."*

## **Water and Environmental Exposure Tests Now Available**

HRI Labs is unique in that they've created two glyphosate tests for the public – a water testing kit and an environmental exposure test kit. The environmental exposure test is a urine test that will tell you how much glyphosate you have in your system. As mentioned

earlier, this will give you a good idea of the purity of your diet. If your glyphosate level is high, chances are you've been exposed to many other agrochemicals as well.

So far, HRI Labs has analyzed more than 1,200 urine samples. The testing is being done as part of a research project, which will provide valuable information about the presence of glyphosate in the diet. It will also help answer questions about how lifestyle and location affects people's exposure to agrochemicals. Here are some of their findings to date:

- 76% of people tested have some level of glyphosate in their system
- Men typically have higher levels than women
- People who eat oats on a regular basis have twice as much glyphosate in their system as people who don't (likely because oats are desiccated with glyphosate before harvest)
- People who eat organic food on a regular basis have an 80% lower level of glyphosate than those who rarely eat organic. This indicates organic products are a safer choice
- People who eat five or more servings of vegetables per day have glyphosate levels that are 50% lower than those who don't eat fewer vegetables

According to Fagan:

*"So far, we haven't seen any connection with rural versus city dwellers, or with seasonal changes. This indicates that most of the glyphosate is coming into our [bodies] through the food we eat and not through the environment around us.*

*Though, we have seen some interesting things. For instance, in the Midwest, we're seeing that rain water has quite substantial levels of glyphosate ... Rain water, although you might think of that as being a healthy source of water, is a little risky that way."*



## **GMOs Linked to Dramatic Rise in Glyphosate Contamination**

HRI Labs is also collaborating with a research group at the University of California in San Diego that has access to urine samples from epidemiological studies in which populations were tracked over 15 and 20 years. By comparing urine samples from people going back into the 1970s, up until the present, they've been able to show that once GMOs appeared in the marketplace, glyphosate levels rose dramatically.

*"[I]t shows there's a correlation between the use of [glyphosate] in agriculture and the level of exposure of the population," Fagan says. "Remember, there's growing evidence that low levels of [chemicals] interact with each other, so that you have a little glyphosate here, and maybe some atrazine from another place, and those together might have a nasty impact ...*

*That's where we are with things today. We're working in a focused way to look at other aspects of our food system, and looking not just for the pesticides and the negative things, but we want to look and understand what the connections between the way food is produced ... and its nutritional value are.*

*What we're seeing is that healthy soil makes healthy food, makes healthy people. We're going to go into that using these very sophisticated techniques, like high pressure liquid chromatography linked to mass spectrometry, to look at all of the nutrients at once.*

*With these machines, from a single sample of broccoli we can look at 500 to 1,000 different metabolites, different nutrients, and in one fell swoop get a sense of ... how does regeneratively produced broccoli compare with broccoli that's produced using chemicals, or how does a chicken produced in a confined animal feeding operation compare in nutritional value to a chicken produced in a regenerative pasture-based production system?*

*We don't have the answers to that yet, but I'll bet we're going to find big differences in the nutrition.*

*The protein value may be the same, and the fats and the carbohydrates, but [in] the micronutrients we're going to see big differences, and it's those micronutrients that make the difference in terms of the health of your physiology, the strength of bones, and the balance in your physiology. We hope to be able to bring some really powerful new information to you in this way ..."*

## **Food Testing Is Here to Stay**

The advent of GMOs drastically altered our food system in several respects, and not a single change has been beneficial. Today, factory farms have become one of the largest sources of toxic pollution that destroys soil, water and air quality, and threatens human health in more ways than one. Nutritional quality of food has declined while contamination with toxic chemicals and drug-resistant pathogens has increased.

Nutritional and chemical testing is an invaluable tool to get an understanding of the full extent of the problem. It is our hope that, with enough evidence, change will eventually be brought about, if not from a government level, then from the ground up, driven by informed consumers demanding purer food.

As mentioned by Fagan, my product development team is now using HRI Labs to evaluate the purity and quality of our own product line as well – an extra double-check, if you will, to ensure our products are maximally pure and safe, and of the highest quality and nutritional value possible. This is being added as another layer of quality control on top of our standard quality protocols.

Again, if you want to test your drinking water or environmental exposure levels for glyphosate, those tests are now available to the public. You can find both of them in my online store. They're provided as a service to my readers at the same price you'd pay if you were to order it right from HRI Labs.

## **Sources and References**

---

- [<sup>1</sup> May 2, 2016 Business Insider](#)