Are Consumers of GMO Crops Exposed to Enough Glyphosate to Increase Cancer Risk? Transcript

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Glyphosate Exposure Sources

"Are Consumers of GMO Crops Exposed to Enough Glyphosate to Increase Cancer Risk?" Glyphosate exposure can occur from a range of sources, including occupational users, people who actually apply the herbicide.

If you live with someone who uses it at work, you could experience "take-home" exposures, when glyphosate goes home with them on their clothes and skin.

And, of course, you can be exposed if you live near farmland where glyphosate is used or walk through a recently sprayed area. For most people, though, the main route of exposure is likely food.

And it's not just from Roundup Ready corn and soy anymore. Glyphosate is now commonly used as a harvest aid on wheat, barley, edible beans, and a few other crops in Northern U. S.

Regulatory Limits and Conflicts of Interest

states, as well as in much of Northern Europe. Because glyphosate is applied within days of harvest, this results in much higher residues on those foods.

But even with these newer applications of glyphosate on food crops, according to a review by four independent expert panels, exposures of the general public are three or more orders of magnitude less than the U. S. Environmental Protection Agency's limit of 1.75 mg/kg/day, as well as stricter limits like those in Europe of 0.5 mg/kg/day.

Hmm. But wait. Turns out these so-called "independent expert panels" didn't fully disclose their conflicts of interests and were employed by Monsanto, the company that sells both the seeds of the glyphosate-resistant crops and the herbicides used on those crops.

Human Absorption Study and Urine Biomarkers

The editor-in-chief of the journal recommended readers take this context into account. Okay. Let's look at a review paper written by the opposing side, which included an author who had worked for a law firm that brought some of the lawsuits against Monsanto.

He at least disclosed his affiliation. Their take: Current glyphosate EPA limits should be reduced 10-fold to 0.175 mg/kg/day, bringing the value beneath the stricter level used by the European Union and closer to that recommended by multiple research groups.

But they acknowledge that the vast majority of human urine samples collected from herbicide workers, so, some of the most highly exposed people, still fall well below this level.

They argue this would provide a 10-fold safety margin, given there aren't reliable data showing no risk to children. So, both Monsanto and anti-Monsanto scientists agree that current exposures levels are within safety limits, even if they disagree on exactly what the number should be.

But wait. All of those estimates are based on the assumption that human dietary absorption is the same as rat absorption, which is all we had to go off of until now.

Here's one of the key papers: "Urine glyphosate level as a quantitative biomarker of oral exposure.

Exposure Estimates and Cancer Risk Context

" Twelve human participants consumed a meal of homemade falafel with a known amount of glyphosate. The falafel's ingredients met all the legal requirements, and the authors clearly note, the food was not spiked with glyphosate.

Over the next two days, they measured the participants' urine and found it contained 0.5 to 1.5% of the glyphosate they consumed. That is much lower than the 20% assumed to be excreted based on animal studies, meaning all those studies using urine measures of glyphosate to estimate intake could be wrong.

So, human glyphosate intake levels may be 20 times higher than previously thought, though if we are 20 times less likely to absorb it, does it matter?

Using the human data for humans instead of rat data and the European limit of 0.5mg/kg bw/day, in non-occupationally exposed people, the max exposures are still only about 1% to 6% of the purported acceptable intake level.

Two studies were way above that, but one was a study investigating aerial spraying in Colombia, and the other was of people living in an agricultural district in Sri Lanka.

The studies finding higher risk of non-Hodgkin's lymphoma developing 15 or 20 years after exposure were for those exposed to the highest reported levels, not necessarily among consumers exposed to it mainly through food.

Cancer isn't the only concern, though. Could low-level exposures create other health risks? I'll cover that next.