Here's Why 'Inert' Ingredients May Be the Most Harmful of All

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By Dr. Mercola

Glyphosate, the active ingredient in Monsanto's Roundup herbicide, has been the focus of increasing scrutiny after the International Agency for Research on Cancer (IARC) determined it to be a probable human carcinogen.

Yet, glyphosate is not the only ingredient in Roundup and other glyphosate-based products, nor is it the only potentially toxic ingredient.

The formulation includes a number of so-called inert ingredients as well, and these have largely evaded scrutiny because they were concealed as proprietary "trade secrets."

Monsanto is now facing multiple lawsuits from people who developed non-Hodgkin lymphoma after using Roundup. The suits allege that glyphosate, along with the product's inert ingredients are to blame, and in fact that the mixture of chemicals together is far more dangerous than glyphosate alone.

According to the Intercept, one of the lawsuits states, "Monsanto 'knew or should have known that Roundup is more toxic than glyphosate alone and that safety studies of Roundup, Roundup's adjuvants and 'inert' ingredients' were necessary."[1]

Inert Ingredients in Glyphosate-Based Herbicides Are Toxic to Living Cells

Most studies looking into glyphosate toxicity have only studied glyphosate and its toxic breakdown product, aminomethylphosphonic acid (AMPA), even though the presence of "inactive" compounds are likely amplifying glyphosate's toxic effects.

A 2012 study revealed that ingredients such as solvents, preser-

Story at-a-glance

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Research found one "inactive" Roundup ingredient, POEA, was toxic to living cells and up to 2,000 times more toxic than glyphosate alone

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vatives, surfactants and other added substances are anything but "inactive." They can, and oftentimes do, contribute to a product's toxicity in a synergistic manner — *even if they're non-toxic in isolation.*

Researcher Reveals Monsanto Has Known Since 1981 That Glyphosate Promotes Cancer

Certain adjuvants in glyphosate-based herbicides were also found to be "active principles of human cell toxicity," adding to the hazards inherent with glyphosate.

It's well worth noting that, according to the researchers, this cell damage and/or cell death can occur at the residual levels found on Roundup-treated crops, as well as lawns and gardens where Roundup is applied for weed control.[2] As written in the International Journal of Environmental Research and Public Health:[3]

> *"Pesticide formulations contain declared active ingredients and co-formulants presented as inert and confidential compounds. We tested the endocrine disruption of co-formulants in six glyphosate-based herbicides (GBH) …*
>
> *All co-formulants and formulations were comparably cytotoxic [toxic to living cells] well below the agricultural dilution of 1 percent (18 to 2000 times for co-formulants, eight to 141 times for formulations).*
>
> *… It was demonstrated for the first time that endocrine disruption by GBH could not only be due to the declared active ingredient but also to co-formulants.*
>
> *These results could explain numerous in vivo results with GBHs not seen with G [glyphosate] alone; moreover, they challenge the relevance of the acceptable daily intake (ADI) value for GBHs exposures, currently calculated from toxicity tests of the declared active ingredient alone."*

'Inert' Ingredient Polyethoxylated Tallowamine (POEA) 2,000 Times More Toxic Than Glyphosate

POEA (polyethoxylated tallow amine), a major adjuvant surfactant in Roundup, has been shown to be cytotoxic (toxic to cells) at doses far lower than glyphosate itself. Unfortunately, most regulatory bodies regard POEA as inert, requiring no risk assessment, even as research suggests otherwise.

The International Journal of Environmental Research and Public Health study found POEA was between 1,200 and 2,000 times more toxic than glyphosate alone, which highlights the problems with letting so-called inert ingredients escape regulatory scrutiny.[4] In 2014, the Institute of Science in Society (ISIS) reported:[5]

> *"The major adjuvant POEA in glyphosate Roundup formulations is by far the most cytotoxic for human cells, ahead of glyphosate and its metabolite. It also amplifies the toxic effects of glyphosate …*
>
> *It is very likely that the primary target of Roundup, especially its POEA surfactant, is the mitochondria, which play a key role in the development of sperm cells and sperm motility. In addition, male infertility could arise from ROS damages to mitochondrial DNA."*

Accumulating Research Shows Roundup More Dangerous Than Glyphosate Alone

Germany removed POEA-containing herbicides from the market in 2014 because a forestry worker developed inflammation of the lungs after exposure.

Earlier this year, ANSES, the national health and safety agency in France, also took steps to ban the product. The European Commission has also proposed banning POEA.

In the U.S., the Food and Drug Administration (FDA) has announced plans to monitor food for glyphosate residue but not for POEA, and the U.S. Environmental Protection Agency (EPA) won't focus on POEA either, simply because it's not an official

active ingredient.

Monsanto must be well aware of the problems, as they're reportedly preparing to transition to other types of surfactants.[6] The fact is, research is mounting that, when it comes to Roundup, the sum of its parts may be even more toxic than glyphosate alone. For instance:[7]

- In 2002 and 2004, studies showed glyphosate-containing herbicides were more likely to cause changes linked to cancer (specifically, cell-cycle dysregulation) than glyphosate alone[8,9]
- In 2005, research showed Roundup to be more toxic to rats' livers than glyphosate alone[10]
- In 2009, various Roundup formulations were found to be more toxic to human umbilical, embryonic and placental cells than glyphosate alone.[11] The researcher explained:

> *"This clearly confirms that the [inert ingredients] in Roundup formulations are not inert … Moreover, the proprietary mixtures available on the market could cause cell damage and even death [at the] residual levels [found on Roundup-treated crops]."*[12]

NAS Releases New Study on Genetically Engineered (GE) Crops

The National Academies of Sciences, Engineering, and Medicine (NAS) released their assessment of genetically modified organisms (GMOs).[13]

The 400-page report, which was sponsored in part by the U.S. Department of Agriculture, cites an ongoing lack of transparency that is fueling distrust in consumers.[14]

For instance, in 2002 the U.S. General Accounting Office recommended that the FDA verify raw test data from a GMO developer on a random basis, but it doesn't appear the FDA followed through with this recommendation. As The Huffington Post reported:[15]

> *"The committee said that much of the information submitted to regulatory agencies seeking approval of new GMO products is kept secret, treated as 'confidential business information.'*
>
> *This lack of public access to health and safety data submitted by developers creates distrust, the committee said.*
>
> *'Given a developer's self-interest in getting a product approved and its control over the material considered by the agency, the lack of access creates skepticism about the quality of the data,' the committee said."*

No Evidence GE Crops Changed the Rate of Increase in Yields

Also noteworthy, the NAS report found no evidence that GE crops led to overall increases in yields of soybeans, cotton or corn, a benefit long parroted by the industry for why GMO crops are necessary to "feed the world."

The spread of resistant weeds and insects as a result of GE crops is also discussed. As for glyphosate, the report only noted there is "significant disagreement among expert committees on the potential harm that could be caused" by its use. It also downplayed the severity of many issues while failing to recommend needed policy changes.

Charles Benbrook, Ph.D. an agricultural economist at Washington State University, recommended three strategies that could significantly reduce human exposure to glyphosate at very little cost (unfortunately, such common-sense strategies were missing from the NAS report):[16]

> *"Hopefully, the U.S. and EU will soon agree to three steps — banning all pre-harvest uses of glyphosate on small grains, edible beans, and other human food crops (all non-GE) …*
>
> *… [S]econd, reducing the ridiculously high tolerances on GE crops that Monsanto and other companies were able to*

get onto the books over the last decade in the U.S., and internationally via Codex; and three, banning use of high-risk surfactants and other so-called 'inert' ingredients in formulated, ready-to-use herbicide products."

Roundup Residues Found in Foods You Might Not Expect

If you want to avoid consuming residues of Roundup, you'll want to limit or eliminate processed foods in your diet. Most of them are made with GE crops that are heavily sprayed with Roundup. Even foods you might not expect can also contain Roundup residues.

An Alliance for Natural Health (ANH) analysis found the highest levels of glyphosate in non-GE crops including bagels, bread and wheat cereal. This, they noted, is likely the result of the common practice of using glyphosate as a desiccant shortly before harvest.

Ten out of 24 breakfast foods tested in ANH's analysis had detectable levels of glyphosate. This included oatmeal, bagels, coffee creamer, organic bread and even organic, cage-free, and antibiotic-free eggs. In addition, advocacy group Moms Across America sent 10 wine samples to be tested for glyphosate. All of the samples tested positive for glyphosate — even organic wines, although their levels were significantly lower.[17]

Roundup isn't even sprayed directly onto grapes in vineyards, but it is often used to spray the ground on either side of the grape vines. A study of glyphosate residues by the Munich Environmental Institute also found glyphosate in 14 best-selling German beers.[18]

All of the beers tested had glyphosate levels above the 0.1 microgram limit allowed in drinking water. Although these studies didn't test for the "inert" Roundup ingredients, if glyphosate was detected there's a good chance their companion additives would be too.

Eat Organic Foods to Avoid Roundup Residues

Your *best* bet for minimizing health risks from herbicide and pesticide exposure — including both the active and "inactive" ingredients — is to avoid them in the first place by eating organic as much as possible and investing in a good water filtration system for your home or apartment. If you know you have been exposed to herbicides and pesticides, the lactic acid bacteria formed during the fermentation of kimchi may help your body break them down.

So including fermented foods like kimchi in your diet may also be a wise strategy to help detox the pesticides that do enter your body. One of the benefits of eating organic is that the foods will be free GE ingredients, and this is key to avoiding exposure to toxic Roundup ingredients.

Eating locally produced organic food will not only support your family's health, it will also protect the environment from harmful chemical pollutants and the inadvertent spread of GE seeds and chemical-resistant weeds and pests.

What You Need to Know About GMOs

Genetically modified organisms (GMOs), or genetically “engineered” (GE) foods, are live organisms whose genetic components have been artificially manipulated in a laboratory setting through creating unstable combinations of plant, animal, bacteria, and even viral genes that do not occur in nature or through traditional crossbreeding methods.

GMO proponents claim that genetic engineering is “safe and beneficial,” and that it advances the agricultural industry. They also say that GMOs help ensure the global food supply and

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