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# The "Safe" Garden Product that Can Destroy Your DNA

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## By Dr. Mercola

Have you ever used Roundup to kill weeds in your lawn or garden?

As the most widely used herbicide in the United States, there's a good chance you have.

In fact, millions of pounds are used every year on U.S. gardens, lawns and, extensively on farms growing genetically modified (GM) "Roundup Ready" crops.

You may forget about the herbicide soon after you spray it -- and may never give it a second thought when consuming corn chips or countless processed foods that contain GM Roundup Ready corn and soy -- but it doesn't just magically disappear.

Instead, new research is showing that glyphosate, the active ingredient in Monsanto's Roundup herbicide, is contaminating everything from food and air to groundwater and even human beings.

## Story at-a-glance

Significant concentrations of the chemical glyphosate, the active ingredient in Roundup herbicide, have been detected in human urine samples; study participants had concentrations of glyphosate that were 5 to 20 times the limit for drinking water

Roundup is the most widely used herbicide in the United States, sprayed liberally on genetically modified crops along with gardens, roadsides and lawns

Glyphosate has been linked to birth defects, endocrine disruption, DNA damage and other health affects, along with Sudden Death Syndrome (SDS), a serious plant disease, and the creation of superweeds

Along with avoiding the use of Roundup around your lawn and garden, you can avoid exposure to glyphosate by boycotting genetically modified foods

## Glyphosate Now Detected in Human Urine

Research in the German journal *lthaca* revealed significant concentrations of glyphosate in the urine samples of city dwellers.

The chemical is used not only for food production, but also is often sprayed onto railway lines, urban pavements and roadsides.

The article revealed that study participants had concentrations of glyphosate that were 5 to 20 times the limit for drinking water!

This is an alarming finding because glyphosate is easily one of the world's most overlooked poisons. Research published in 2010 showed that the chemical, which works by inhibiting an enzyme called EPSP synthase that is necessary for plants to grow, causes birth defects in frogs and chicken embryos at far lower levels than used in agricultural and garden applications.<sup>1</sup>

The malformations primarily affected the:

- Skull
- Face
- Midline and developing brain
- Spinal cord

Quite shockingly, the amount of glyphosate residue you can be exposed to through food is remarkably high, in terms of being close to the maximum residue limit (MRL) allowed. According to a report in the journal *Chemical Research in Toxicology*, the highest MRL for glyphosate in food and feed products in the EU is 20 mg/kg. GM soybeans have been found to contain residue levels as high as 17 mg/kg, and malformations in frog and chicken embryos occurred at 2.03 mg/kg!<sup>ii</sup>

That's 10 times lower than the MRL.

Other independent scientific research has also found that glyphosate has the potential to cause grave health damage, including a 2009 study that tested formulations of Roundup that were highly diluted (up to 100,000 times or more) on human cells, and even then the cells died within 24 hours!<sup>iii</sup>

The researchers hailed a warning cry that still has not been heard by regulators around the world, who continue to allow massive amounts of Roundup to be sprayed into the environment:

*"... the proprietary mixtures available on the market could cause cell damage and even death around residual levels to be expected, especially in food and feed derived from [Roundup] formulation-treated crops."*

Not to mention, when applied to crops glyphosate becomes systemic throughout the plant, so it cannot be washed off. And once you eat this crop, the glyphosate ends up in your gut where it can decimate your beneficial bacteria. This can wreak havoc with your health as 80 percent of your immune system resides in your gut (GALT – Gut Associated Lymph Tissue) and is dependent on a healthy ratio of good and bad bacteria! Separate research has also uncovered the following effects from glyphosate:

Endocrine disruption	DNA damage
Developmental toxicity	Neurotoxicity
Reproductive toxicity	Cancer

### What Happened to Monsanto's Claims That Roundup is "Biodegradable" and "Environmentally Friendly"?

It is apparent the chemical is not only persisting in the environment, it's persisting at alarmingly high levels, despite Monsanto's claims to the contrary. (In 2009, a French court upheld two earlier convictions against Monsanto for false advertising.)

The overall quantity of glyphosate in the environment has been difficult to analyze due to its physicochemical properties, such as its relatively low molecular weight and low organic solvent

solubility. Furthermore, since the U.S. Department of Agriculture (USDA) stopped updating its pesticide use database in 2008, it's becoming increasingly difficult to estimate how much glyphosate is actually used in the US, but the following 2006-2007 market usage estimates were reported by the Environmental Protection Agency (EPA) in 2011:<sup>iv</sup>

- Agricultural market used 180 to 185 million pounds of glyphosate
- Home and garden market: 5 to 8 million pounds
- Industry, commerce and government: 13 to 15 million pounds

It's safe to say that usage has increased steadily since these estimates were made, rising right along with the acreage of GM crops. And now the environment and our bodies are paying the price.

One recent study used a magnetic particle immunoassay to test for the presence of glyphosate in roughly 140 samples of groundwater from Catalonia, Spain. The analysis found that glyphosate was present above the limit of quantification in 41 percent of the samples.<sup>v</sup> Of course, because groundwater is used as a drinking water source, this contamination poses a risk to animals, plants and humans alike.

The chemical was also detected in 60 to 100 percent of all air and rain samples tested during two growing seasons in Mississippi and Iowa,<sup>vi</sup> which lends further credence to the fact that Roundup does not readily break down in the environment, but rather is lingering all around us. Along with the potential implications for human and animal health, the chemical is also linked to a number of devastating environmental consequences, including Sudden Death Syndrome (SDS), a serious plant disease, and the creation of superweeds.

Today there are more than 750 products in the United States that contain glyphosate, and the problems to human health and the environment are only slated to get worse if drastic changes are not made in the massive use of Roundup herbicide across the United States.

## You Can Help Curb the Use of Glyphosate by Avoiding GMOs

It's important to avoid the use of Roundup on your lawn and garden, but on a larger scale the best way to fight back against this chemical is by boycotting the GM crops that were developed for its use. Several organizations, including Mercola.com, the Organic Consumers Association, the Institute for Responsible Technology, and the Environmental Working Group, are working to generate a tipping point of consumer rejection to make GMOs a thing of the past.

Here's how you can get involved:

- If you live in California and are willing to attend a short training session and then start collecting petition signatures (you will be part of a team of 2-4 people) for the California Ballot Initiative, sign up here. (For more information see: The California Ballot Initiative: Taking Down Monsanto.) Also remember to share this information with family and friends in California!
- Whether you live in California or not, please donate money to this historic effort
- Distribute WIDELY the Non-GMO Shopping Guide to help you identify and avoid foods with GMOs. Look for products (including organic products) that feature the **Non-GMO Project Verified Seal** to be sure that at-risk ingredients have been tested for GMO content. You can also download the free iPhone application that is available in the iTunes store. You can find it by searching for ShopNoGMO in the applications.

In the meantime, the simplest way to avoid GM foods is to buy whole, certified organic foods. By definition, foods that are certified organic must never intentionally use GM organisms, must be produced without artificial pesticides and fertilizers and come from an animal reared without the routine use of antibiotics, growth promoters or other drugs. Additionally, grass-fed beef will not have been fed GM corn feed, although now that GM alfalfa is approved, grass-fed will not always mean GMO free.


You can also look for foods that are "non-GMO verified" by the Non-GMO Project.

## Your Opportunity to Eliminate Genetically Engineered Foods from the U.S.

In 2007, then-Presidential candidate Obama promised to "immediately" require GM labeling if elected. So far, nothing of the sort has transpired.

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Image



Labeling of genetically engineered food is way overdue...

Be assured that what happens in California will affect the remainder of the U.S., so please support this important state initiative, even if you do not live there!

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<sup>i</sup> [Chemical Research in Toxicology 2010; 23\(10\):1586–1595](#)

<sup>ii</sup> [Chemical Research in Toxicology 2010; 23\(10\):1586–1595](#)

<sup>iii</sup> [Chemical Research in Toxicology 2009 Jan;22\(1\):97-105.](#)

<sup>iv</sup> U.S. Environmental Protection Agency, [Pesticides Industry Sales and Usage, 2006 and 2007 Market Estimates](#) (PDF)

<sup>v</sup> [Analytical and Bioanalytical Chemistry November 20, 2011](#)

<sup>vi</sup> [Environmental Toxicology and Chemistry. 2011 Mar;30\(3\):548-55.](#)

Source: [GM Watch January 20, 2012](#)

Source: [Ithaca Journal](#)

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