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Poisoned Fields — Glyphosate, the Underrated Risk?

Analysis by Dr. Joseph Mercola | September 21, 2024

STORY AT-A-GLANCE

- The documentary "Poisoned Fields — Glyphosate, the Underrated Risk?" chronicles the risks of glyphosate to human health and the environment
- Researchers found severely restricted, damaged root growth among plants growing in fields treated with glyphosate for more than a decade
- Farmers also noted correlations between glyphosate in animal feed and rates of miscarriage, deformities in piglets and infertility among farm animals

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Glyphosate, the active ingredient in Bayer's (formerly Monsanto) Roundup, is an herbicide like no other, as more tons of it have been sprayed worldwide than any other herbicide before it. Writing in Environmental Sciences Europe, scientists noted that in the U.S. and likely globally, "no pesticide has come remotely close to such intensive and widespread use."[1]

"Glyphosate will likely remain the most widely applied pesticide worldwide for years to come," they continued, which is alarming as its environmental and public health risks become increasingly apparent.

Glyphosate is used in large quantities on genetically engineered (GE) glyphosate-tolerant crops (i.e., Roundup Ready varieties). Its use actually increased nearly 15-fold

since such GE crops were introduced in 1996.[2] Glyphosate is also a popular tool for desiccating (or accelerating the drying out) of crops like wheat and oats.

Unbeknownst to many, glyphosate is sprayed onto many crops shortly before harvest, which is why residues have been found in GE and non-GE foods alike. In the documentary above, "Poisoned Fields — Glyphosate, the Underrated Risk?" you can hear why this is so concerning.

While many farmers continue to believe the chemical is relatively benign and using it is safe for their crops and the environment, both the crop fields and the public are being poisoned as a result.

Glyphosate Damages Plant Root Systems, Soil

After farm fields are treated with glyphosate for years, you can see the physical damage that glyphosate causes. After two years, the fields are still green but after 11 years, the video shows drone footage of brown, burned-out fields that the farmers reported as mysterious damage.

The fine roots of plants are responsible for taking in nutrients from the soil, but if they're damaged the plant cannot do so efficiently. Not surprisingly, researchers found severely restricted root growth, with far fewer fine roots, among plants growing in the fields treated with glyphosate for more than a decade.

Gunter Neumann, Ph.D., nutritional crop physiologist with the University of Hohenheim in Germany, explained:

> *"We conducted a state-financed residue analysis for glyphosate and other pesticides. For glyphosate, the data consistently showed that the levels of residue that were present [six] months after the application were as high as one would expect directly after the spring.*
>
> *Two meters [6.56 feet] over, where the fields were treated for a shorter time, all levels were below the detection limits."*

The damage happened slowly, and as such wouldn't have been noticed if the glyphosate-treated fields weren't in such close proximity. Farmers increased fertilizer applications on the damaged fields in the hopes of saving the crops, but it didn't help.

One farmer, who was forced to speak anonymously for fear of retaliation for speaking negatively about glyphosate, found plant viruses increased when he sprayed the chemical.

"On some fields it caused a total yield loss," he said. This was only observed in the areas treated with glyphosate for long periods (longer than two or three years). Neumann noted that advances in molecular biological methods have allowed researchers to detect other types of damage on the crops, including:

- Hormonal disturbances
- Negative effects on physiological processes, including a downregulated stress response
- Genes involved in water intake became less active

Glyphosate is said to work by inhibiting only a single enzyme to kill unwanted plants, but Neumann proved that glyphosate also changes plant genes involved in root growth, water intake and stress resistance.

Glyphosate in Feed Sickens Farm Animals

The documentary also highlights the harm glyphosate exerts on farm animals consuming glyphosate-treated feed. One German pig farmer noticed pigs giving birth to fewer piglets and an increase in stillborn and deformed piglets, which he said increase with the level of glyphosate in the feed.

With glyphosate at levels of 1.30 parts per million (ppm) in the feed, 1 out of 529 piglets were born deformed. At 2.26 ppm, 1 out of 240 piglets were born deformed, a linear increase. Higher doses of glyphosate in the feed were clearly associated with a higher number of deformities in the piglets.

When he switched to glyphosate-free feed, the problems declined. To be sure this wasn't a coincidence, he then switched the pigs back to the glyphosate-treated feed. He noticed the pigs seemed to eat less of the feed and had more diarrhea, which required him to use more antibiotics.

This is a side effect known before, as glyphosate may disrupt the balance of gut microbes in mammals (including humans). Anthony Samsel, Ph.D., research scientist and environmental consultant, and Stephanie Seneff, Ph.D., a research scientist at the Massachusetts Institute of Technology (MIT), explained:

> *"One likely effect of chronic low-dose oral exposure to glyphosate is a disruption of the balance among gut microbes towards an over-representation of pathogens. This leads to a chronic inflammatory state in the gut, as well as an impaired gut barrier and many other sequelae."*

Does Glyphosate Cause Fertility Problems?

The documentary also includes a family dairy farmer in Germany who noticed his cows developed fertility problems after he began supplementing their diets with a concentrated feed that contained glyphosate residues.

It was impossible to purchase a concentrated feed that did not contain residues, and no manufacturer would guarantee the feed would be glyphosate-free.

He then switched to a locally produced feed and experienced dramatic results. Reproduction rates doubled from 30% to 60% when glyphosate was no longer part of the feed. Disturbingly, it's also been found that glyphosate may affect fertility in humans.

In 2014, a report from the Institute of Science in Society (ISIS) highlighted what appears to be the perfect storm for an "infertility time-bomb," courtesy of glyphosate.[3] Average sperm counts have dropped by nearly half in the last 50 years, even among men without fertility problems.

Further, ISIS noted, 20% of young European men have sperm counts below the World Health Organization (WHO) reference level of 20 m/ml, and 40% have levels below 40 m/ml, which is associated with prolonging the time to pregnancy. Meanwhile, rates of conditions that impact semen quality and fertility are also on the rise.

There are, of course, many potential explanations for these conditions, but, as ISIS noted, it has been proposed that an environmental toxicant, especially an endocrine-disrupting chemical such as glyphosate, may be involved.

In December 2013, meanwhile, a study revealed that Roundup exposure induced cell death in Sertoli cells in prepubertal rat testis.[4] Sertoli cells are required for male sexual development, including maintaining the health of sperm cells. The exposure was a low dose (36 ppm), which is well within the U.S. Environmental Protection Agency's (EPA) food safety levels.

Glyphosate Led to Tumors in Rats

The International Agency for Research on Cancer (IARC) has determined glyphosate is a probable human carcinogen. Previous research on animals, including rats, has led to similar findings.

In 2012, the first-ever lifetime feeding study evaluating the health risks of glyphosate and GE foods found that rats fed a type of GE corn that is prevalent in the U.S. food supply for two years developed massive mammary tumors, kidney and liver damage, and other serious health problems. According to the authors:[5]

> *"The health effects of a Roundup-tolerant genetically modified maize (from 11 [percent] in the diet), cultivated with or without Roundup, and Roundup alone (from 0.1ppb in water), were studied [two] years in rats.*
>
> *In females, all treated groups died [two to three] times more than controls, and more rapidly. This difference was visible in [three] male groups fed GMOs. All results were hormone- and sex-dependent, and the pathological profiles were comparable.*

Females developed large mammary tumors almost always more often than and before controls, the pituitary was the second most disabled organ; the sex hormonal balance was modified by GMO and Roundup treatments.

In treated males, liver congestions and necrosis were 2.5 [to] 5.5 times higher ... Marked and severe kidney nephropathies were also generally 1.3 [to] 2.3 greater. Males presented [four] times more large palpable tumors than controls, which occurred up to 600 days earlier."

The findings were a nail in the coffin for the pesticide/biotech industry, but then the journal began to receive Letters to the Editor alleging fraud and calling upon the editors to retract the paper.

After what the journal described as a "thorough and time-consuming analysis" of the study, they said they found "no evidence of fraud or intentional misrepresentation of the data." All they could find "wrong" with the research was that it used a low number of animals, but they, quite outrageously, retracted this important paper nonetheless. Even the retraction statement admits that the results presented are "not incorrect" but rather may be "inconclusive."

How Glyphosate Is Destroying the Soil

Numerous studies have also shown that glyphosate is contributing not only to the huge increase in Sudden Death Syndrome (SDS), a serious plant disease, but also to an outbreak of some 40 different plant and crop diseases. It weakens plants, destroys soil and promotes disease in a number of ways, including:

- Acting as a chelator of vital nutrients, depriving plants of the nutrients necessary for healthy plant function
- Destroying beneficial soil organisms that suppress disease-causing organisms and help plants absorb nutrients
- Interfering with photosynthesis, reducing water use efficiency, shortening root systems and causing plants to release sugars, which changes soil pH

- Stunting and weakening plant growth

The herbicide doesn't destroy plants directly; instead, it creates a unique "perfect storm" of conditions that activates disease-causing organisms in the soil, while at the same time wiping out plant defenses against those diseases.

Glyphosate Detected in Urine and Breastmilk

Laboratory testing commissioned by the organizations Moms Across America and Sustainable Pulse revealed that glyphosate is now showing up virtually everywhere.

The analysis revealed glyphosate in levels of 76 μg/L to 166 μg/L in women's breast milk. As reported by The Detox Project, this is 760 to 1,600 times higher than the EU-permitted level in drinking water (although it's lower than the U.S. maximum contaminant level for glyphosate, which is 700 μg/L.).[6]

This dose of glyphosate in breastfed babies' every meal is only the beginning. An in vitro study designed to simulate human exposures also found that glyphosate crosses the placental barrier. In the study, 15% of the administered glyphosate reached the fetal compartment.[7]

The documentary also features the director and founder of Moms Across America, who states they found glyphosate in her son's urine around the same time as the onset of symptoms of autism.

Seneff has also pointed out correlations between increased glyphosate use from previous years and skyrocketing **autism rates**. She identified two key problems in **autism** that are unrelated to the brain yet clearly associated with the condition — both of which are linked with glyphosate exposure:

- Gut dysbiosis (imbalances in gut bacteria, inflammation, leaky gut and food allergies such as gluten intolerance)
- Disrupted sulfur metabolism/sulfur and sulfate deficiency

Interestingly, certain microbes in your body actually break down glyphosate, which is a good thing. However, a byproduct of this action is ammonia, and children with autism tend to have significantly higher levels of ammonia in their blood than the general population.

Glyphosate Far More Restricted in Europe Than in the US

European Commission leaders met in March 2016 to vote on whether to renew a 15-year license for glyphosate, which was set to expire in June. The decision was tabled amid mounting opposition, as more than 180,000 Europeans signed a petition calling for glyphosate to be banned outright. Ultimately, more than 2 million signatures were collected against relicensing the chemical.

In June, however, the European Commission granted an 18-month extension to glyphosate while they continue the review. A ruling is expected by the end of 2017. In the meantime, restrictions were announced in the interim, including a ban on a co-formulant (tallow amine), increased scrutiny of pre-harvest uses of glyphosate and efforts to minimize its use in public parks and playgrounds.

Unlike in the U.S., where glyphosate use is largely unrestricted, "seven EU states have extensive glyphosate prohibitions in place, two have restrictions and four countries have impending or potential bans," The Guardian reported.[8]

Test Your Personal Glyphosate Levels

If you'd like to know your personal glyphosate levels, you can now find out, while also participating in a worldwide study on environmental glyphosate exposures. The Health Research Institute (HRI) in Iowa developed the glyphosate urine test kit, which will allow you to determine your own exposure to this toxic herbicide.

Ordering this kit automatically allows you to participate in the study and help HRI better understand the extent of glyphosate exposure and contamination. In a few weeks, you will receive your results, along with information on how your results compare with others

and what to do to help reduce your exposure. We are providing these kits to you at no profit in order for you to participate in this environmental study.

ORDER NOW

In the meantime, eating organic as much as possible and investing in a good water filtration system for your home are among the best ways to lower your exposure to glyphosate and other **pesticides**. In the case of glyphosate, it's also wise to avoid desiccated crops like wheat and oats.

Sources and References

- [1, 2] Environmental Sciences Europe February 2, 2016
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