Glyphosate herbicide in vaccines? Here is what concerned parents should know

It's a nightmare scenario: an herbicide used to kill weeds is discovered in vaccines, threatening to turn disease-preventing and often life-saving inoculations hazardous to health and even life.

The campaigning anti-chemical group Moms Across America [read Genetic Literacy Project profile here] announced that a study it commissioned found trace amounts of glyphosate—the world's most-used herbicide, often used with plants genetically modified to resist it—in several vaccines.

> Earlier this year, Moms Across America sent 5 childhood vaccines to an independent lab to be screened for glyphosate. All 5 tested positive for glyphosate, with the MMR vaccine showing levels 25X higher than the other vaccines.
>
> Further, more accurate tests are urgently needed by the FDA and CDC to confirm exact amounts. However, any amount is unacceptable. Action must be taken to protect our infants and children.

Moms Across America sent letters to the FDA, CDC, NIH, EPA, California US Senator Barbara Boxer and the California Department of Public Health urging more testing on glyphosate and revoking the herbicide's license. The report was picked up by many anti-GMO activist sites, including Natural News, March Against Monsanto, and Vaccine-Injury Info. Even Erin Brockovich, the consumer activist known for her work on environmental contamination (Julia Roberts starred as her in a profile feature film), amplified the frightening findings—if they were indeed accurate and meaningful— on her Facebook page:

> Not sure what to make of this yet… but it should piss you off. .. Wondering if glyphosate could be contaminating not only our water, urine, breast milk, food, soil, beer and wine, but our vaccines as well." Moms Across America ran some tests…Glyphosate, a chemical ingredient found in Monsanto's Roundup and hundreds of other herbicides, has been found in vaccines.

Anti-vaccine groups, such as those supporting Stephanie Seneff and her papers on the alleged dangers of glyphosate, GMOs and vaccines have also lauded the study as evidence of harmful vaccination. Seneff is a MIT computer scientist with no expertise in genetics or chemicals. She was quoted on MAAM's blog Eco-Watch as claiming certain vaccine viruses including measles in MMR and flu are grown on gelatin derived from the ligaments of pigs fed heavy doses of glyphosate in their GMO feed."

Seneff has written several papers in what are known as predatory, pay-for-pay journals that have found correlations supposedly linking glyphosate, GMOs and vaccines to autism, cancer and other diseases—even though independent mainstream scientists have found no causative links. She discussed her opposition to vaccines and glyphosate in this video:

It's all sounds scary. However, it's not clear that any glyphosate was actually in any of MAAM's samples..and if glyphosate residues are present in vaccines, which is highly doubtful, t's almost certain

that the residue exposure levels are so minute as to be meaningless.

The study

The “study”, which has not been release for review let alone appeared in a peer-reviewed scientific publication was conducted by a private St. Louis company called Microbe Inotech which does not have the expertise to do a sophisticated assay on glyphosate, allegedly identified these concentrations of glyphosate:

- Influenza vaccine, 0.331 ppb
- MMR vaccine, 2.671 ppb
- Pneumococcal vaccine, 0.107 ppb
- Hepatitis B vaccine, 0.325 ppb
- T Dap vaccine, 0.123 ppb

MAAM said that additional studies were conducted by Anthony Samsel, who calls himself a “research scientist/consultant“, although there is no evidence he has a science degree or expertise in this type of research. He has collaborated and is a co-author with Seneff on numerous studies that mainstream scientists have labeled quack research. Apparently Samsel found similar trace amounts of glyphosate in vaccine preparations he tested. His “study” also has not appeared in a peer-reviewed scientific publication, but he did post this video:

Monsanto, the maker of Roundup, the patented form of glyphosate, responded that the study, like others commissioned by MAAM, has significant problems:

> The testing method used here for vaccines appears to be a method that was developed as a quick and inexpensive screening test for water samples to decide whether additional testing with a more expensive and precise method is needed. Simply put, because of this method’s potential for false positives at very low concentrations, a negative result of the test on water means no further testing is required; a positive result means one should conduct the more expensive test to confirm. This quick and inexpensive screening test has only been shown to work well in water – not vaccines, not wine, not beer, not milk, not eggs. Just water.

A method problem

The study used a method called ELISA, which is short for enzyme-linked immunosorbent assay. ELISA is a very fast, somewhat reliable method for determining the concentrations of chemicals, by using a pairing of radioactive labeled antibodies. This test is often used for determining levels of cholesterol in blood, for example. It is not, however, at all accurate at measuring anything in low parts per billion.

More accurate methods of measuring volumes in that minute a range would be techniques called gas chromatography/mass spectrometry, or GC/MS, in which chemicals are ionized (having an electron removed, usually), and the now-electrically charged molecule or chemical is measured by its mass and charge. This is a longer (and expensive) procedure, but extremely accurate. Gas chromatography, the

“GC” part, is carried out before the “MS” step, and separates your targeted chemical from other chemicals in your sample.

Peter Davies, an emeritus professor of plant biology at Cornell, in an interview with the Genetic Literacy Project warned against ELISA as a useful test at very low concentrations:

> At 1-10 ppb it is awfully easy to think you are analyzing a specific compound when in fact you are tracing some other compound so unless I saw the full mass spectra to at least 2 decimal places I would say that glyphosate is not proven, and few labs have that degree of sophistication.
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> ELISA is notoriously susceptible to interference by the presence of other compounds, both in the positive and negative direction, and while fine for a first approximation, it is not acceptable for a definitive measurement. No top ranked journal in the field accepts ELISA as definitive proof for small molecules unless accompanied by further proof. The gold standard is multiple ion mass spectrometry after HPLC and or GC, or as MS-MS.

Even the Detox Project, a testing organization that has been involved with glyphosate testing with MAAM and others, has questioned relying on ELISA:

> ELISA testing methods for pesticides can produce false positive and false negative results and thus cannot be used by regulators – ELISA methods can give inaccurate results. These methods are usually used as a screening tool and any positive results have to be confirmed by a chromatographic method to be usable in risk assessment.

The company MAAM contracted for its study only used the ELISA method.

Debunked studies and questionable motives

These claims by Seneff and Samsel echo previously debunked MAAM campaigns. Friends of the Earth Europe and Mom’s Across America claimed in 2014 that an informal test they had funded found minute traces of glyphosate in breast milk and urine, causing a furor, with the story widely circulated across anti-GMO and quack websites, and even in such nominally mainstream blogs as Civil Eats.

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The results were challenged in a study by Washington State University scientist and lactation expert, Michelle McGuire, who found no evidence that glyphosate accumulates in breast milk. Activists criticized the study's authors, which included three Monsanto employees, although the data was independently scrutinized. Two subsequent German studies, including an independent report in 2016 by scientists affiliated with the independent German Federal Institute for Risk Assessment (BfR)–which does risk assessments for the European Commission–found no traces of glyphosate. The studies used mass spectrometry to discover that none of the research subjects had glyphosate in their breast milk samples up to the technical limit of MS (which is much more sensitive than the methods Samsel and MAAM reported).

As for glyphosate, the world's most-used pesticide has become a symbol for opposition to genetic engineering in food, and has been alleged of causing a number of harms, including cancer. However, a number of national and international health and environment agencies—WHO, the EFSA, the US EPA, US EPA, and Germany's federal risk assessment institute—have found no harm from the chemical. Only the cancer research arm of WHO—International Agency for Research on Cancer (IARC)—claimed that glyphosate poses a "probable" hazard (which isn't the same as an exposure risk). It's not clear that what MAAM's contract organization found is even glyphosate—the Microbe Inotech study even indicates that the amount in milk was the only validated method.

Dan Goldstein, a Monsanto scientist who authored the company's response to the MAAM announcement, wrote:

Everything that regulatory agencies and credible scientists know about glyphosate tells us this outcome is extremely unlikely. Unfortunately, such sensational allegations only serve to spark unwarranted fear and confusion and make finding reliable information much more difficult.

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