

Is there a difference in the toxic effects of glyphosate versus herbicides like Roundup that include surfactants?

Glyphosate is rarely used on its own in the field. Herbicide formulations as a whole include a variety of other chemicals, such as surfactants to help glyphosate enter plant cells, and other additives that extend the product's shelf life. This spurred [Deborah Kurrasch, a neuroscientist at the University of Calgary] to compare the effects of glyphosate alone to the effects of Roundup (containing the same glyphosate concentration) in zebrafish. Remarkably, she found Roundup had the opposite effect as glyphosate by itself: The fish moved more, and basal respiration was higher.

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In a [study published in January](#), Kurrasch found that in *C. elegans* worms, exposure to Touchdown [Syngenta's glyphosate-containing herbicide] could increase the activity of specific reactive oxygen species—which cause oxidative stress—and also mitochondrial inhibition. The worms also [showed neurodegeneration](#) in both dopaminergic and GABAergic neurons. This was at concentrations at which occupational agricultural and pesticide workers would routinely be exposed to....

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[William Reeves](#), Chemistry Safety and Outreach Lead at Monsanto, is not surprised about the results of such studies. The surfactants used in Roundup are similar to those used in regular household products, he explains, which cause membrane degradation and subsequent mitochondrial breakdown in high doses. “You would see the same thing with dish detergent, you would see it with hand soap,” he tells *The Scientist*.

He says that concentrations of glyphosate and Roundup generally applied in previous studies greatly exceeded those that would be normally found in real-world environments.

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[[Vanessa Fitsanakis](#), a neurotoxicologist at Northeast Ohio Medical University] adds that based on the data she has seen, “the amount that we could be ingesting with food is relatively small,” especially considering that the majority of glyphosate [is used on field crops](#) that we don't eat directly, she explains. Farmworkers' occupational exposure to the pesticide, and the adjuvants it is used with, is what concerns her most.

Read full, original post: [How Toxic is the World's Most Popular Herbicide Roundup?](#)