

Childhood Exposure to Glyphosate Linked to Liver Inflammation and Metabolic Disorder

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by [Sustainable Pulse](#)

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New research from the UC Berkeley School of Public Health in the U.S. shows that childhood exposure to the world's most widely used weed killer, glyphosate, is linked to liver inflammation and metabolic disorder in early adulthood, which could lead to liver cancer, diabetes, and cardiovascular disease later in life.

[The study](#) of 480 mother-child duos from the Salinas Valley, California—a rich agricultural region that locals call “The World’s Salad bowl”—was published in *Environmental Health Perspectives*, a journal of the National Institute of Environmental Health Sciences.

The researchers, led by Brenda Eskenazi, director of the UC Berkeley School of Public Health’s Center for Environmental Research and Community Health (CERCH), examined the agricultural use of glyphosate near the homes of the mothers during pregnancy and in the children up to age 5 years; and also measured glyphosate and AMPA, a degradation product of glyphosate and amino-polyphosphonates, in their urine (collected from mothers during pregnancy and from children at ages 5, 14, and 18 years). They assessed liver and metabolic

health in the children when they were 18 years old.

The authors reported that higher levels of glyphosate residue and AMPA in urine in childhood and adolescence were associated with higher risk of liver inflammation and metabolic disorders in young adulthood. In addition, the investigators found that agricultural glyphosate use near participants' homes from birth and up through age five was associated with metabolic disorders at age 18. They reported that diet was likely a major source of glyphosate and AMPA exposure among study participants, as indicated by higher urinary glyphosate or AMPA concentrations among those adolescents who ate more cereal, fruits, vegetables, bread, and in general, carbohydrates.

Glyphosate Box

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Glyphosate is used routinely on genetically modified crops such as corn, soybeans and wheat, as well as oats, legumes and other produce. It is also present in many lawn care products for home and commercial use.

The debate over the impact of glyphosate and AMPA on human health has been contentious. In 2015, the International Agency for Research on Cancer (IARC) classified glyphosate as “probably carcinogenic to humans,” but the U.S. Environmental Protection Agency reports no evidence of human health risk. However, most previous glyphosate research has focused on glyphosate’s potential carcinogenicity. This is the first time that researchers have examined the potential connection

between early life exposure to glyphosate—whose use has markedly increased over the past two decades—and metabolic and liver disease, both of which are increasing among children and young adults.

The impetus for this study came from Salinas physician Charles Limbach, who was alarmed by the growing number of local youths with liver and metabolic diseases. Dr. Limbach wondered if the increasing public exposure to glyphosate might be a factor. He teamed up with Paul J. Mills, a UC San Diego professor and author of a [previous study](#) showing an association between higher levels of glyphosate residue and AMPA in adults and non-alcoholic fatty liver disease. The two men then approached Professor Eskenazi, who is also the founder of the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS), the longest running longitudinal birth cohort investigation on the health effects of pesticides and other environmental exposures among children in a farmworker community. The CHAMACOS researchers reached back into their “library” of frozen biological samples from mother and child dyads, along with more than 20 years of exposure data and health records.

“The study’s implications are troubling,” said Dr. Ana Maria Mora, a CERCH investigator and coauthor, “as the levels of the chemicals found in our study participants are within the range reported for the general U.S. population.”

Professor Eskenazi recommends that the use of glyphosate should be limited to essential use while further studies are conducted. “There’s no reason why anyone should be using glyphosate on their lawn,” she said. “It shouldn’t be sold over the counter in a nursery.”

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