

Study finds increase of herbicide in older adults

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Among a sample of older adults living in Southern California, average urine levels of the herbicide glyphosate and its metabolite increased between 1993 and 2016, as did the proportion of samples with detectable levels, according to a study published by *JAMA*.

Glyphosate, the primary ingredient in a herbicide sprayed onto [genetically modified crops](#), is found in these crops at harvest. Genetically modified crops were introduced in the United States in 1994. Environmental [exposure](#) through dietary intake of these [crops](#) has potential adverse health effects and can be assessed by measuring urinary excretion.

Paul J. Mills, Ph.D., of the University of California, San Diego, and colleagues measured excretion levels of glyphosate and its metabolite aminomethylphosphonic acid (AMPA) in participants from the Rancho Bernardo Study of Healthy Aging. Among the participants in the study, 112 had routine morning spot urinary biospecimens obtained at each of five clinic visits that took place from 1993 to 1996 and from 2014 to 2016. One hundred of these 112 were randomly selected for this study (average age in 2014-2016 was 78 years; 60 percent were women).

The researchers found that the average glyphosate level increased from 0.024 $\mu\text{g/L}$ in 1993-1996 to 0.314 $\mu\text{g/L}$ in 2014-2016, and reached 0.449 $\mu\text{g/L}$ in 2014-2016 for the 70 participants with levels above the limits of detection (LOD). Average AMPA levels increased from 0.008 $\mu\text{g/L}$ in 1993-1996 to 0.285 $\mu\text{g/L}$ in 2014-2016, and reached 0.401 $\mu\text{g/L}$

in 2014-2016 for the 71 participants with levels above the LOD. The prevalence rates of glyphosate samples above the LOD increased significantly over time, from 0.120 in 1993-1996 to 0.700 in 2014-2016. The prevalence of AMPA samples above the LOD increased significantly from 0.050 in 1993-1996 to 0.710 in 2014-2016.

The authors write that animal and human studies suggest that chronic exposure to glyphosate-based herbicides can induce adverse health outcomes. In July 2017, in accordance with the Safe Drinking Water and Toxic Enforcement Act of 1986, the state of California listed glyphosate as a probable carcinogen. "Future studies of the relationships between chronic [glyphosate](#) exposure and human health are needed."

The article notes some limitations, including that the study group lived in Southern California, which might have different exposures than other states.

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