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EWG Petitions CDC To Conduct Biomonitoring Studies on Glyphosate

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**To: U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
National Center for Environmental Health
Agency for Toxic Substances and Disease Registry
4770 Buford Hwy, NE
Atlanta, GA 30341
Patrick Breyse, Ph.D., CIH**

Environmental Working Group (EWG), a nonprofit research and advocacy organization with headquarters in Washington, D.C., is petitioning the Centers for Disease Control and Prevention to add glyphosate, the most heavily used pesticide in the U.S., to the CDC's Biomonitoring Program.

Exposure and epidemiological research have demonstrated that Americans may be exposed to glyphosate from food sprayed with the chemical; from water and air because of the widespread presence of glyphosate in the environment; and from the residential and occupational application of glyphosate-based herbicides. These exposures have grown dramatically in the past two decades. As has been demonstrated by a biomonitoring study of older adults in Southern California, between 2014 and 2016, at least 70 percent of study participants had detectable traces of glyphosate in their bodies, compared to 12 percent of participants tested between 1993 and 1996.¹

These increases in exposure have paralleled the growth in the volume of glyphosate sprayed every year, with more than 250 million pounds sprayed annually in 2012, 2013, 2015 and 2016, as data from the U.S. Geological Survey show.² A recent review of 19 studies of the evidence of human exposure to glyphosate globally highlighted the limitations of currently available data and concluded that "additional studies are urgently needed."³

EWG is petitioning the CDC to address the lack of nationwide biomonitoring studies of glyphosate, especially for exposure of young children. The EPA's dietary risk assessments indicate that children one to two years old likely have the highest exposure levels, comparable with EPA estimates of exposure in occupational settings – and yet real life data

¹ Mills PJ, Kania-Korwel I, Fagan J, McEvoy LK, Laughlin GA, Barrett-Connor E. 2017. Excretion of the Herbicide Glyphosate in Older Adults Between 1993 and 2016. *JAMA*. 318(16): 1610-1611.

² U.S. Geological Survey. 2018. Estimated Annual Agricultural Pesticide Use. Available at <https://water.usgs.gov/nawqa/pnsp/usage/maps/>

³ Gillezeau C, van Gerwen M, Shaffer RM, Rana I, Zhang L, Sheppard L, Taioli E. 2019. The evidence of human exposure to glyphosate: a review. *Environmental Health* 18:2 doi: 10.1186/s12940-018-0435-5



on infants' and children's exposure to glyphosate are missing.⁴ In the recently published Toxicological Profile for Glyphosate, the Agency for Toxic Substances and Disease Registry recommends improved biomonitoring of glyphosate in humans as well as "monitoring of children's exposure to glyphosate." The CDC is in a unique position to address this crucial data gap by including glyphosate in the National Health and Nutrition Examination Survey biomonitoring program.

Epidemiological evidence has linked glyphosate exposure with an elevated risk of cancer, neurodevelopmental changes and impact on the reproductive system. Of the eight epidemiological studies assessing the use of glyphosate-based herbicides by agricultural workers and risk of non-Hodgkin lymphoma, five find a positive association. Importantly, the increased risk identified in two individual studies was greatest with longer exposure dose, such as number of application days, which suggests a dose-response relationship.^{5,6} Four separate meta-analyses published between 2014 and 2019 have identified a statistically significant 30 to 50 percent increase in the risk of non-Hodgkin lymphoma due to occupational glyphosate exposure.^{7,8,9,10}

The latest scientific publications also suggest that glyphosate exposure during pregnancy can affect the development of the fetus and the health of newborn infants and young children. A study by scientists from the University of California Los Angeles found that prenatal glyphosate exposure, assessed on the basis of the California Pesticide Use Reporting data, was associated with a 33 percent increase in risk for autism spectrum disorder combined with intellectual disability.¹¹ In addition, prenatal exposure to glyphosate, measured by urinary glyphosate concentrations, was associated with shorter gestational length in an Indiana birth cohort.¹²

⁴ FIFRA Scientific Advisory Panel Meeting Minutes and Final Report No. 2017-0, EPA's Evaluation of the Carcinogenic Potential of Glyphosate, Dec. 13-16, 2016.

⁵ Eriksson M, Hardell L, Carlberg M, et al. 2008. Pesticide exposure as risk factor for non-Hodgkin lymphoma including histopathological subgroup analysis. *Int J Cancer* 123(7):1657-1663. 10.1002/ijc.23589.

⁶ McDuffie HH, Pahwa P, McLaughlin JR, et al. 2001. Non-Hodgkin's lymphoma and specific pesticide exposures in men: Cross-Canada study of pesticides and health. *Cancer Epidemiol Biomarkers Prev* 10(11):1155-1163. _

⁷ Zhang L, Rana I, Shaffer RM, Taiolo E, Sheppard L. 2019. Exposure to glyphosate-based herbicides and risk for non-Hodgkin Lymphoma: a meta-analysis and supporting evidence. *Mutation Research/Reviews in Mutation Research*, in press. Available at <https://www.sciencedirect.com/science/article/pii/S1383574218300887>

⁸ Schinasi L, Leon ME. 2014. Non-Hodgkin lymphoma and occupational exposure to agricultural pesticide chemical groups and active ingredients: A systematic review and meta-analysis. *Int J Environ Res Public Health* 11(4):4449-4527.

⁹ Chang ET, Delzell E. 2016. Systematic review and meta-analysis of glyphosate exposure and risk of lymphohematopoietic cancers. *J Environ Sci Health Part B* 51(6):402-434.

¹⁰ IARC. 2017. Glyphosate. Some organophosphate insecticides and herbicides. In: IARC monographs on the evaluation of carcinogenic risks to humans. Volume 112. International Agency for Research on Cancer. <http://monographs.iarc.fr/ENG/Monographs/vol112/mono112.pdf>. June 4, 2018.

¹¹ Von Ehrenstein OS, Ling C, Cui X, Cockburn M, Park AS, Yu F, Wu J, Ritz B. 2019. Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: Population based case-control study. *BMJ* Mar 20;364:1962 doi: 10.1136/bmj.1962

¹² Parvez S, Gerona RR, Proctor C, Friesen M, Ashby JL, Reiter JL, Lui Z, Winchester PD. 2018. *Environmental Health* 17:23 doi: 10.1186/s12940-018-0367-0.



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In conclusion, given the extensive use of glyphosate nationwide, the documented increase in human exposure to glyphosate over time, and the risk of health harm from glyphosate, including cancer and the effects on fetal development, monitoring of the U.S. population for glyphosate exposure is both timely and crucial. A national biomonitoring effort will give epidemiologists the opportunity to study the health effects associated with glyphosate exposure. EWG thus urges CDC to include glyphosate in its national biomonitoring efforts, which will facilitate additional studies illuminating glyphosate exposure trends and the health effects associated with glyphosate exposure in the general public.

Submitted on behalf of the Environmental Working Group,

Alexis Temkin, Ph.D., Toxicologist

Olga V. Naidenko, Ph.D., Vice President,
Science Investigations