## Impacts of Glyphosate on soil, Crop, Animal, Human and Environmental Health Don M. Huber, Professor Emeritus, Purdue University

The advertised benefits of glyphosate-containing herbicides misrepresent both the safety and necessity of these products. It is well documented that many weeds are resistant to these chemicals and that GMO crops have reduced root growth, lowered nutrient density, increased disease, greater stress susceptibility and the need for more pesticides than crops sprayed with other compounds. The abundance of **weeds resistant to glyphosate based herbicides** complicates our ability to control these pests and adds additional toxic pesticides that our children and pets are exposed to, and that are detrimental in the foods we eat every day.

Contrary to the common claim of safety, a large volume of peer-reviewed scientific information shows that herbicides containing the glyphosate herbicide are chronically toxic to human and animal tissues. They lead to cancer, premature death, kidney and liver failure, infertility, autism, allergies, inflammatory bowel diseases and blood disorders. There are NO peer-reviewed scientific studies showing that glyphosate is safe for human or animal consumption.

Medical data indicates that millions of children and adults are suffering from consuming the chronically toxic glyphosate herbicide (Roundup®) and other toxic chemicals that accumulate in soil and plants. Massachusetts Institute of Technology scientists have documented that glyphosate (Roundup®) is the most chronically toxic chemical in our food and environment.

As a patented powerful antibiotic, the herbicide glyphosate is also toxic to beneficial microorganisms in the soil and GI tract of humans and animals that are essential for mineral absorption, vitamin production, immunity, tryptophan synthesis in autism, Parkinson's disease, and defense against pathogens such as *E. coli, Salmonella, Listeria*, and *Clostridium*. The increase of 'gut related' diseases are directly correlated with glyphosate residues in food, water and feed products. These include Alzheimer's, autism, birth defects, breast and numerous other cancers, celiac, chronic fatigue, diabetes, *C. difficile* diarrhea, end stage kidney failure, infertility, irritable bowel, leaky gut, Parkinson's, peritonitis, rheumatoid arthritis, and many others.

The indiscriminate use of one-half billion pounds of glyphosate a year in the U.S. is precipitating a major chronic health and environmental crisis in our children. In Argentina, drift from spraying glyphosate on GMO crops increased birth defects, reproductive failure and cancer in adjacent towns up to 450 %. Other studies show that as little as 0.1 part per billion Roundup® in drinking water increased infertility, breast cancer, kidney failure, liver failure, non-alcoholic fatty liver disease, endocrine hormone disruption and cytotoxicity to cells and tissues.

Much of this pesticide accumulates in food, feed and in the body. The EPA has already approved residue limits 4,000 times higher than previously permitted – all without any safety evaluation! The USDA, EPA, and FDA have NO independent testing on the accumulated pesticide's safety, and rely solely on statements of the companies that the high levels accumulating in soil, food and nature are safe. Scientific studies have consistently shown that they are **not safe**.

Glyphosate-based herbicides are a serious chronic health and safety threat to all humans and to our environment. Future historians may well look back upon our time and write, not about how many pounds of pesticides we did or did not apply, but about how willing we were to sacrifice our children and jeopardize future generations with this massive indiscriminate use of glyphosate, just to benefit the bottom line of a commercial enterprise.

Dr. Don M. Huber is Emeritus Professor, Purdue University, West Lafayette, IN; COLONEL, US Army (Ret, Medical Intelligence); Former Associate Director, Armed Forces Medical Intelligence Center, Now National Medical Intelligence Center; Prior Chairman, USDA National Plant Disease Recovery Program; member, US Threat Pathogens Committee; former member of the Advisory Board, Office of Technology Assessment, US Congress (now Congressional Research Service); and Global Epidemiology Working Group, Office of The Surgeon General.

## Some suggested reading

- Antoniou, M., Robinson, C., Fagan, J. 2014. GMO Myths and Truths Report: An evidence-based examination of the claims made for the safety and efficacy of genetically modified crops. 2<sup>nd</sup> Ed. Earth Open source 330 pp. (free download).
- Brown, G. 2018. <u>Dirt to Soil</u>: One Family's Journey into Regenerative Agriculture. Chelsea Green Publishing, White River Junction, Vermont.
- Druker, S.M. 2015. <u>Altered Genes, Twisted Truth: How The Venture To Genetically Engineer Our Food Has Subverted Science, Corrupted Government, and Systematically Deceived The Public.</u> Clear River Press, SLC, UT.
- ENSSER. 2014.Statement: There is no scientific consensus on GMO safety. European Network of Scientists for Social and Environmental Responsibility. 19 May 2014.
- Gillam, C. 2017. Whitewash: The Story of a Weed Killer, Cancer, and the Corruption of Science. Island Press.
- Gillam, C. 2021. The Monsanto Papers: Deadly Secrets, Corporate Corruption, and One Man's Search for Justice. Island
  Press.
- Guyton, K.C., et al. 2015. Carcinogenicity of tetrachlorvinphos, parathion, malathion, diazinon, and glyphosate. World Health Org.-IARC, Lyon France DOI: <a href="http://dx.doi.org/10.1016/S1470-2045(15)70134-8">http://dx.doi.org/10.1016/S1470-2045(15)70134-8</a>.
- Honeycutt, Z.. 2018. <u>Unstoppable: Transforming Sickness and Struggle into Triumph, Empowerment, and a Celebration of Community</u>. Moms Across America Publishing.
- Hoy, J, Swanson, N, and Seneff, S 2015. The high cost of pesticides: Human and animal diseases. Poultry, Fisheries and Wildlife Sciences 3:1-19.
- Johal, G.S. and Huber, D.M. 2009. Glyphosate effects on diseases of plants. Euro. J. Agron. Doi:10.1016/j.eja.2009.04.004.
- Krimsky, S. 2015. An illusory consensus behind GMO health assessment. Science, Technology, and Human values 1-32.
- Leu, A. 2018. Poisoning Our Children. ACRES U.S.A. Greeley, CO.
- Mitra, T. 2017. Poison Foods of North America: Guide to navigating the glyphosate mine field in our food web (ebook). https://www.amazon.com/POISON-FOODS-NORTH-AMERICA-navigating-ebook/dp/B06XS4Y6H2/ref=sr 1 1?ie=UTF8&qid=1490569537&sr=8-1&keywords=poison+foods+of+north+america
- Perro, M. and Adams, V. 2017. What's Making Our Children Sick? Exploring the Links Between GM Foods, Glyphosate, and Gut Health, Chelsea Green Pres.
- Samsell, A. and Seneff, S. 2012. Glyphosate's suppression of cytochrome P450 enzymes and amino acid biosynthesis by the gut microbiome: pathways to modern diseases. Entropy 15:1-x manuscripts; doi: 10.3390/el40x000x.
- Samsell, A. and Seneff, S. 2013. Glyphosate, pathways to modern diseases II: Celiac sprue and gluten intolerance. Interdiscip. Toxicol. 6:159-184.
- Samsell, A. and Seneff, S. 2015. Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies. Surg. Neurol. Int. 6:45-70.
- Samsell, A. and Seneff, S. 2015. Glyphosate, pathways to modern diseases IV: cancer and related pathologies. *J. Biol. Physics Chem* 15: 121–159.
- Seneff, S. 2021. Toxic Legacy: How the Weedkiller Glyphosate is Destroying Our Healoth and the Environment. Chelsea Green publisher.
- Seralini, G-E, Clair, E., Mesnage, R., Gress, S., Defarge, N., Malaesta, M., Hennequin, D., and de Vendomois, JS. 2012. Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize. Food Chem. Toxicol. http://dx.doi.org/10.1016/j.fct.2012.08.005.
- Seralini, G-E, Clair, E., Mesnage, R., Gress, S., Defarge, N., Malaesta, M., Hennequin, D., and de Vendomois, JS. 2014.
  Republished study: Long term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize.
  Environmental Sci. Europe 26:14-31
- Shehata, A., Schrodl, W., Aldin, AA, Hafez, HM., Krueger, M. 2012. The effect of glyphosate on potential pathogens and beneficial members of poultry microbiota in vitro. Current Microbiology DOI 10.1007/s00284-012-0277-2.
- Swanson, NL, Leu, A., Abrahamson, J., and Wallet, B. 2014. Genetically engineered crops, glyphosate and the deterioration of health in the United States of America. Journal of Organic Systems 9:6-37.
- Van Bruggen, AHC, He, MM, Shin, K, Mai, V, Jeong, KC, Finckh, MR, and Morris, JG Jr. 2018. Environmental and health effects of the herbicide glyphosate. Sci. Total Environ. 617-617: 255-268.
- Wilson, C.L. and Huber, D.M. 2021. Synthetic Pesticide Use in Africa: Impact on People, Animals, and the Environment. CRC Press.
- Wilson, J. and Ryznic, J. Improving Our Health and Reducing the Violence in America: An Expose of Glyphosate Poison in Our Food and the Cover-up. EBook Free at: www.Myfoodstuff.com