Comprehensive long-term toxicological studies repeated over the last 30 years have time and again demonstrated that glyphosate is unlikely to pose a cancer risk in humans. The U.S. EPA groups glyphosate in the lowest and most favorable category, E, indicating evidence of noncarcinogenicity for humans.

We have highlighted and included summaries from some key publications that demonstrate the safety of glyphosate when used according to label instructions. We have also included a list of many publications and documents publicly available that discuss human exposure to glyphosate; epidemiology and glyphosate, glyphosate and the lack of genotoxicity and carcinogenicity as well as many government and World Heath Organization reviews of glyphosate.

**NOTE:** Corey – We’d like to have a sidebar, or perhaps a section at the top, to update regularly as new studies become available. Perhaps it’s simple as creating a sidebar, or perhaps it makes sense to develop a section that can be updated as needed. I’ll defer to your expertise on this matter. It’s important for this section to be near the top of the page.

**Key Glyphosate Publications:**


  **Summary:** A new scientific publication examining 14 separate cancer studies in rats and mice conducted over the last several decades concludes that there is no evidence that glyphosate, the active ingredient in Roundup branded herbicides, causes cancer. The article, in *Critical Reviews in Toxicology*, evaluated the data from these long-term studies to determine whether there were any patterns to suggest humans exposed to glyphosate would have any concern about developing cancer. Other scientifically relevant information such as expert regulator evaluations, human dietary exposures and epidemiological studies were also discussed. The clear and consistent view across more than 30 years of relevant information continues to support the first expert opinions from the 1980s, that glyphosate does not cause cancer.


  **Summary:** A new look at data from the US Agricultural Health Study (AHS) clarifies that there is no relationship between glyphosate use and the risk of multiple myeloma, a type of cancer. The article considered data collected from over 57,000 pesticide applicators to determine whether a relationship exists between multiple myeloma and glyphosate exposure. These results contradict the outcome of a previous analysis of AHS data that relied on a restricted data set to reach a different conclusion. This reanalysis of the full AHS data set for multiple myeloma is consistent with other epidemiological and laboratory research that demonstrated glyphosate does not cause cancer.

**Summary:** A recent review examined several studies that alleged damage to the DNA in cells collected from people after self-reported exposures to glyphosate-based herbicides. The author concluded that there are no direct risks to human DNA under normal exposure conditions. These findings are consistent with an earlier review of an extensive number of laboratory studies that also demonstrated no direct effect on DNA. Taken together, these results confirm previous conclusions that glyphosate-based herbicides do not damage DNA in humans following real world exposures.


**Summary:** A review of an extensive number of laboratory studies examining the potential for glyphosate and glyphosate-based herbicides to damage DNA concludes that these products do not damage DNA under normal exposure conditions. This review includes peer-reviewed publications and regulatory studies. The evaluation of the large amount of data available confirms that glyphosate is not genotoxic to humans and that glyphosate and glyphosate-based products do not damage DNA under normal exposures.


**Summary:** A review of 21 epidemiological studies found no causal relationship between exposure to glyphosate and cancer in adults or children. This observation is consistent with conclusions from regulatory authorities that glyphosate is unlikely to pose a risk to human health based on previous toxicology studies.


**Summary:** The German Federal Institute for Risk Assessment reviewed seven existing biomonitoring studies where trace amounts of glyphosate were found in human urine samples. The authors concluded that at the levels of glyphosate found, there is no concern for human health. After oral intake glyphosate is not metabolized significantly by humans and is rapidly excreted in urine. By measuring urine levels it is possible to calculate internal exposure levels. They concluded that realistic exposures are low and are well below the worst-case assumptions used by regulatory agencies.
Additional Glyphosate Publications:

**Exposure**


**Epidemiology**


• Jurek, A. M., S. Greenland, and G. Maldonado. 2008. How far from non-differential does exposure or disease misclassification have to be to bias measures of association away from the null? *Int J Epidemiol* 37:382-385.


**Toxicology Studies**

Regulatory and Government Documents

- US EPA. 2013 Federal Register Final Rule Glyphosate; Pesticide Tolerances. 78 (84): 25396-25401. The following documents provide the assessments behind this final rule:
  - US EPA. 2012. Dietary Exposure and Risk Assessment (EPA-HQ-OPP-2012-0132-0011) in Support of the Requested Application of Glyphosate to Carrots, Sweet Potatoes, and Oilseeds (Crop Group (CG) 20) and to Update the CG Definitions for Bulb Vegetable (CGT 3-07), Fruiting Vegetable (CG 8-10), Citrus Fruit (CG 10-10), Pome Fruit (CG 11-10), and Berry (CG 13-07).
• Australian Pesticides and Veterinary Medicines Authority (APVMA). 2013. A review of the Earth
Open Source (EOS) report.
• Germany Federal Institute for Risk Assessment (BFR) - Update on glyphosate review. 2015.
  o http://www.bfr.bund.de/cm/343/eu-wirkstoffpruefung-zu-glyphosat-stand-der-dinge-
  und-ausblick.pdf
• Germany Federal Institute for Risk Assessment (BfR) Annex 1 Renewal Assessment Report
  Glyphosate
• EFSA European Food Safety Authority Final review of the Sérinali et al. 2012a publication on a 2-
  year rodent feeding study with glyphosate formulations and GM maize NK603 published online
  19 September 2012 in Food and chemical Toxicology. EFSA Journal 2012 10(11):2986.
• ANSES National Agency for Food, Environmental and Occupational Health Safety. 2014.
  SCIENTIFIC AND TECHNICAL SUPPORT MEMORANDUM on the analysis of the differences
  between ‘Republished study: long-term toxicity of a Roundup herbicide and a Roundup-tolerant
  genetically modified maize’ by Sérinali et al. (2014) and the original publication of said study in
  2012.
• Germany Federal Institute for Risk Assessment (BfR) opinion on Seralini et al. 2012 “Feeding
  study in rats with genetically modified NK603 maize and with a glyphosate containing
  formulation (Roundup) published by Sérinali et al. (2012)”
  http://www.bfr.bund.de/cm/349/feeding-study-in-rats-with-genetically-modified-nk603-maize-
• Food Standards Australia New Zealand FSANZ. 2013. Response to Seralini paper.