

Table 1 Glyphosate “Safety thresholds”—US Environmental Protection Agency, the European Food Safety Authority and the California Office of Environmental Health Hazard Assessment John Fagan, Ph.D., john.fagan@HRILabs.org

Authority	Glyphosate Exposure Limit US: cRfD; EU ADI; CA NSRL	Glyphosate Exposure Limit for 150 lb person
	µg/kg body weight/day	mg glyphosate/70 kg body weight/day
US-EPA ¹	2000.00	140.0000
EU Food Safety Authority ²	500.00	35.0000
Cal. Health Hazard Assessment (Prop 65) ³	16.00	1.1000
Child Safety Threshold ⁴	0.16	0.0110
Non-Alcoholic Fatty Liver Disease ⁵	0.01	0.0007

Information Sources	
1-EPA Document Stating cRfD (Chronic Reference Dose) for Glyphosate	https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_PC-417300_1-Sep-93.pdf
2-EFSA Document Stating ADI (Acceptable Daily Intake) for Glyphosate	European Commission: European Commission Directorate-General for Health and Food Safety. Final Review report for the active substance glyphosate finalised in the Standing Committee on Plants, Animals, Food and Feed at its meeting on 9 November 2017 in view of the renewal of the approval of glyphosate as active substance in accordance with Regulation (EC) No 1107/20091. http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=activesubstance.detail&language=EN&selectedID=1438.
3-California Doc Stating Prop 65 NSRL (No Significant Risk Level) for Glyphosate	https://oehha.ca.gov/chemicals/glyphosate
4-Suggested Child Safety Threshold	Threshold based on Prop 65 but adding 100-fold safety threshold for children and vulnerable populations
5-Non-Alcoholic Fatty Liver Disease	Glyphosate level documented to trigger Non-Alcoholic Fatty Liver Disease in Rats

Commentary on Table 1

The table above summarizes the “safety thresholds” set for glyphosate by regulators at the US Environmental Protection Agency, the European Food Safety Authority and the California Office of Environmental Health Hazard Assessment.

The US EPA says that it is totally safe for humans to consume 2000 µg glyphosate per day for every kilogram of body weight. For a person who weighs 150 pounds, that translates into eating 140 mg of glyphosate each day. Interestingly the European Food Safety Authority sets the safety level at one quarter the level of the US EPA. California has a more stringent threshold yet; their threshold is 1/127th that of the EPA. Clearly regulators cannot agree on what levels of glyphosate are safe.

Based on the California Office of Environmental Health Hazard Assessment’s evaluation of glyphosate, the “No Significant Risk Level” of 1100 µg/kg body weight/day is associated with one excess cancer case per 100,000 individuals exposed. The population of California is 39,613,489, therefore this NSRL accepts that if the population of California were to be uniformly exposed to glyphosate at the rate of 1100 µg/kg body weight/day, it would be OK for $39,613,489/100,000 = 396$ people to contract glyphosate-induced cancer.

We do not consider this an acceptable No Significant Risk Level, especially because it does not consider that all California residents are not healthy adults. There exists a significant sub-population of vulnerable individuals, young children, pregnant women, the elderly, etc. Reducing the NSRL 100-fold to 11 µg/kg body weight/day would be justified to assure protection of the vulnerable, and this would also reduce the cancer rate from 396 to 3.96 for healthy adults in California. We would suggest this to be a more reasonable safety threshold, based on the research results used by the California Office of Environmental Health Hazard Assessment.

However, if one looks to the most up-to-date research on glyphosate toxicity, one finds that in an animal study, exposure to even the lowest level of glyphosate that was tested, 0.01 µg/kg body weight/day, caused early stages of Non-Alcoholic Fatty Liver Disease. Calculations based on this result would lead to a profoundly lower NSRL. However, it is premature to make such calculations because a more substantial dataset would be required to support such a calculation. However, this one result is suggestive that in-depth research is likely to push the safety threshold for glyphosate even lower than the Child Safety Threshold listed in Table 1, above.