

To Producers, Processors & Consumers:

Recently, I purchased wheat bran, whole wheat flour, and unbleached all-purpose flour from a Winnipeg supermarket. All were produced from Canadian wheat.

I had them tested for glyphosate contamination.

There were very concerning levels of glyphosate in all three samples. The bran was worst, but the two flours were disturbing, as well.

The levels of glyphosate in these products are presented in the graph below.

The graph shows that the levels of glyphosate in these three products are hazardous to health. The solid red vertical lines mark 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 levels in the three wheat samples are lower than these legal thresholds, but that doesn’t mean that these products are safe.

What does “safe” really mean?

The US EPA says that it is safe for a person who weighs 150 pounds to consume 140 mg of glyphosate each day. In contrast, the European Food Safety Authority sets the safety level at 1/4 the level of the US EPA. California has an even more stringent threshold; their threshold is 1/127th that of the EPA.

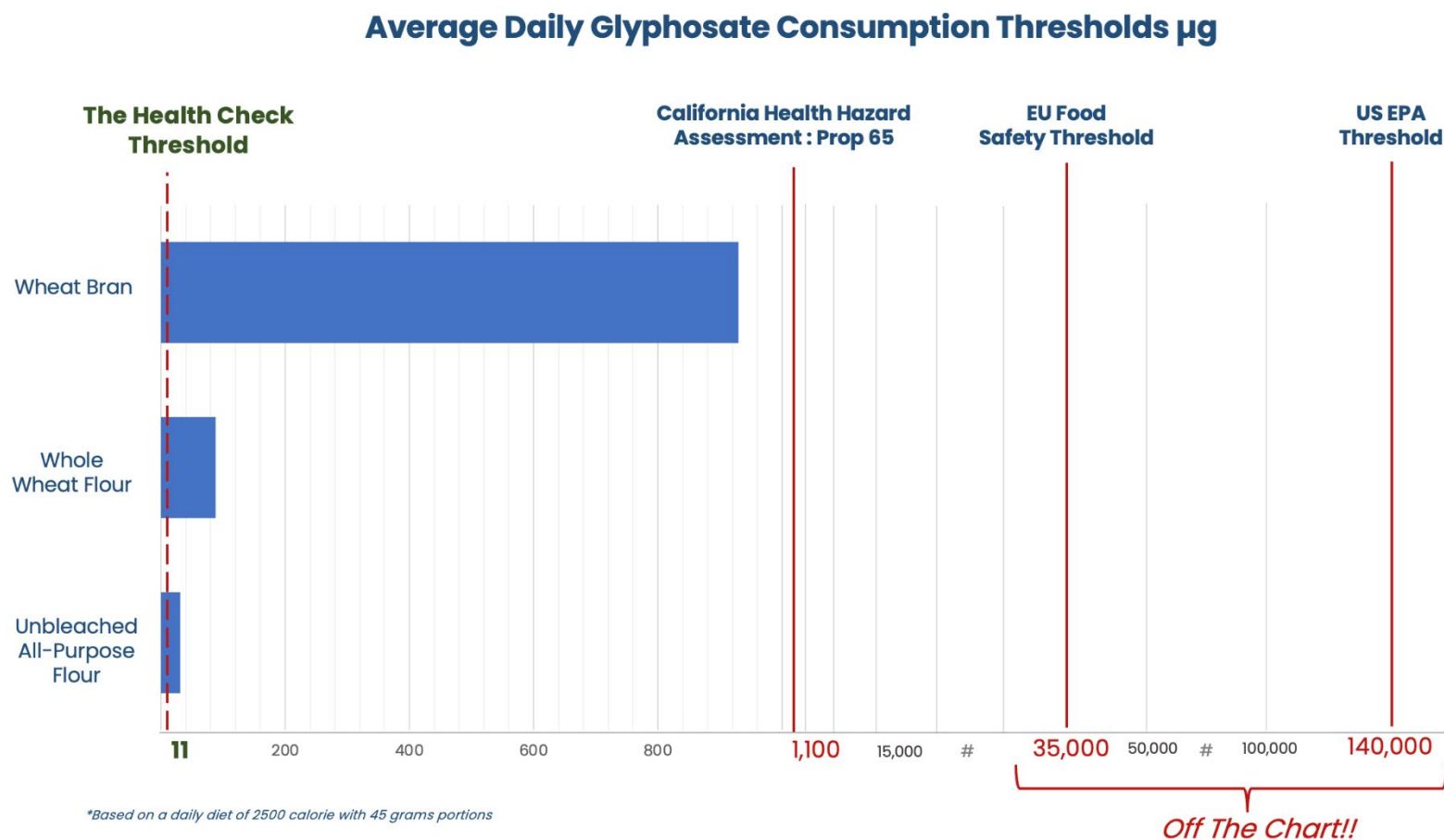
Clearly there is significant confusion among regulators regarding what levels of glyphosate are safe!

By their own calculations, the California threshold would still result in 396 cancer cases per year in California alone!

Based on careful analysis of the scientific literature, the Health Research Institute suggests that the safety threshold should be set 100-fold lower than the California threshold, 0.011 mg/kg body weight/day. Operating to this threshold would reduce the cancer cases to 3.9 per year. That threshold corresponds to the dashed red line very close to the bottom of the graph.

As the graph shows, the levels of glyphosate in all three wheat samples are much higher than this threshold, indicating that the glyphosate levels in all three of these samples are high enough to have harmful effects on the health of the people and livestock that consume that wheat. One piece of practical information that you may have already heard is that producers who switch to glyphosate-free feed find that their animals are healthier, their veterinarian bills go down and their animals gain weight more quickly.

Below the graph, you can find the analytical report for the three Canadian wheat samples, and also a table that outlines the various official thresholds presented in the graph.



Dr. John Fagan of Health Research Institute makes the following comment regarding these test results, "It would appear that the present allowable levels and proposed increases in allowable limits set by regulators around the world for glyphosate, and also for other pesticides, are

established for efficiency, etc., in production with little consideration of the impacts of these toxic chemicals on health and welfare of the humans and/or animals that consume these grains.”

My opinion is that this approach is unacceptable. We must upgrade our production systems for grain and food. This will improve:

- Human Health
- Animal Health
- Soil Health

How to upgrade? If we wait for regulators, it will take decades to make this happen. A coordinated industry effort would also take years. But a few innovative producers, processors, manufacturers and brand owners could create a market demand-driven program that would make this happen much more quickly.

What could be done would be to set up a system that makes it possible for grain and food producers to receive premiums for products that meet or exceed science-based specs for reduced pesticide levels and for increased nutrient density. These specs would be established based on testing for chemicals such glyphosate and based on testing for nutrient density.

Producers would receive premiums for crops that meet these specs for higher quality and discounts for products that do not meet specs. Publicizing that these products are safer due to reduced pesticides and healthier, due to higher nutrition will stimulate consumer demand. This will, in turn, create the opportunity for more and more companies to benefit from this trend. This market-driven approach may generate progress most rapidly.

There is growing consumer demand for safer, healthier food, food with reduced pesticide levels and increased nutrient density. People are willing to pay a premium for such foods because they know it will protect and improve health and reduce health-care costs for their families, and reduce pain, suffering and health care costs in society as a whole, now and in the future. It will also benefit livestock production, increasing rate of growth and development, and reducing health problems and vet bills. On the other hand, if we continue the present path in grain and other food production, health care costs and other costs to society, including degradation of our soils, will continue and become even worse. Only two segments of society, Big Pharma and Big Ag benefit from present production methods.


If producers and brand-owners can provide information at the point of purchase, showing that their products are safer and healthier, consumers will buy those products. Authenticated labels on products at the processing and manufacturing levels, indicating reduced chemical presence and higher nutrient density, will assure processors and manufacturers they are purchasing high quality ingredients, that will enable them to present consumers with higher quality products that demand a premium. Labels would assure consumers that they are buying safer more nutritious products for their families, and consumers will be ready to pay a premium for such products. Labels will drive consumer demand for safe,

healthy nutritious food, this will motivate brand owners and manufacturers, then processors and then farmers to produce these better foods that benefit everyone's health, as well as the health of the soil and the environment.

Carefully designed market-driven incentives to producers, processors, manufacturers and brand owners will speed up the change to producing safe, healthy food because it creates new opportunities for every party in the food supply chain. This approach will address the problems of our food system much faster than government legislation, and will be accomplished at far less total cost to society.

Harvey Dann

Report Number	S0008359
Report Date	2021-09-13




Health Research Institute
Laboratories

Certificate of Analysis						
Sample Description: Wheat Samples				Sample Numbers: S0008359-8361		
Client: Harvey Dann / Alert Agri Distributors Inc				Receipt Date: 2021-04-13		
Sample Mass: see below				Test Date: 2021-08-13, 2021-09-02		
Sampling time and date: N/A				Shipment Temp: Ambient		
				Storage Temp: Ambient		

Samples:				Results:		
Sample ID#	Sample Description/ UPC Code	Lot # and Expiration Date	Sample Volume / Mass	Glyphosate (ng/g)	AMPA (ng/g)	Effective Glyphosate Level (ng/g)
S0008359	Wheat Bran	N/A	450 g	3064.53	65.43	3,162.68

S0008360	Whole Wheat Flour	N/A	2.5 kg	276.76	16.00	300.76
S0008361	Unbleached All-Purpose Flour	N/A	2.5 kg	86.13	12.12	104.31
Typical glyphosate levels in wheat						
<p>Glyphosate levels ranging from zero to 10 ng/g, are considered “safe” in light of current peer-reviewed scientific publications, and levels up to 30 ng/g are considered of minimal concern, while levels up to 60 ng/g are of low concern. The levels reported in conventional wheat range from 300 to 2000 ng/g, while those in organic wheat typically range from 5 ng/g to 30 ng/g.</p> <p>Although the levels in conventional wheat are within the range considered safe by the Environmental Protection Agency and the European Food Standards Agency this is not consistent with current evidence in the peer-reviewed scientific literature.</p>						
Methods						
<p>Sample Analysis: ISO 17025-accredited HRI Method TM #8 "Glyphosate and AMPA Detection by LC-MS/MS"</p> <p>Sample preparation employed a modification of the method described in Chamkasem, Narong, Cynthia Morris, and Tiffany Harmon. 2016. “Direct Determination of Glyphosate, Glufosinate, and AMPA in Milk by Liquid Chromatography/tandem Mass Spectrometry.” <i>Journal of Regulatory Science</i> 3 (2): 20–26.</p> <p>LC-MS/MS analysis employed a modification of the method described in Jensen, Pamela K., Chad E. Wujcik, Michelle K. McGuire, and Mark A. McGuire. 2016. “Validation of Reliable and Selective Methods for Direct Determination of Glyphosate and Aminomethylphosphonic Acid in Milk and Urine Using LC-MS/MS.” <i>Journal of Environmental Science and Health, Part B</i> 51 (4): 254–59. doi:10.1080/03601234.2015.1120619.</p>						
<p>Limit of Quantitation (LOQ) and Limit of Detection (LOD) are 0.05 parts per billion (ppb) and 0.02 ppb, respectively, for glyphosate and 0.05 ppb and 0.013 ppb, respectively, for AMPA. All values are based on equipment and reference materials that are traceable to ISO 17025 compliant calibrations. Measurement uncertainties are calculated and are available upon request. Results apply to the sample as received and relate only to the sample which is tested on an "as is" basis.</p>						
<p>Effective Glyphosate Level calculated according to Food and Agriculture Organization (FAO) method where total Effective Glyphosate residue is the sum of the weight of glyphosate + 1.5 × the weight of its metabolite AMPA.</p>						
<p>Released on Behalf of HRI Laboratories by</p> <p>P.O. Box 370</p> <p>Fairfield, IA 52556</p> <p>+1 641-552-6258</p>						



Dr. John Fagan, Chief Scientist

Glyphosate “Safety thresholds”—US Environmental Protection Agency, the European Food Safety Authority, and the California Office of Environmental Health Hazard Assessment

Authority	Glyphosate Exposure Limit US: cRfD; EU ADI; CA NSRL	Glyphosate Exposure Limit for 150 lb person
(Units: 0.001 kg = 1 g = 1000 mg = 1,000,000 µg)	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

Comments on Table

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 the fact 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 establish that threshold without more extensive data on this matter. However, this one result is suggestive that in-depth research is likely to push the safety threshold for glyphosate even lower than the Health Check Safety Threshold indicated in the figure.

Glyphosate and other herbicides, insecticides and other kinds of pesticides are toxins. The ideal is to avoid any and all toxins in our food. But recognizing that the ubiquitous use of these chemicals in our current agricultural system makes it virtually impossible to completely avoid such toxins, we can adopt the Health Check Safety Threshold, shown in the graph above, as a practical standard for

minimum risk for glyphosate contamination of foods. That gives us a goal—to keep the level of glyphosate in our daily diet below 11 µg per day.

With this goal set, we can set practical targets for maximum glyphosate contamination in specific categories of foods, given a typical daily diet of 2500 calories and how much of each class of foods we eat each day. Although we will not bore you with the details (but feel free to request details if you are interested), we have carried out an in-depth analysis of such a diet, and have come up with the following targets: For fruit, vegetables and similar items, glyphosate concentration should stay under 10 ng/g (or 10 ppb), and for legumes, grains and other carbohydrates, levels should stay under 30 ng/g (or 30 ppb). The levels of glyphosate and many other pesticides in meat, dairy and dietary fats are generally undetectable, although they carry other contaminants unique to those production systems, which must be considered independently.

Based on the above analysis, we have set the following thresholds for glyphosate in foods:

- Levels of glyphosate below 10 ppb in any food can be considered of minimal concern.
- Levels between 10 ppb and 30 ppb can be considered best practice since widespread use of glyphosate makes total avoidance extremely difficult, but the lower, the better. Until the levels are below 10 ppb, additional work is needed to identify sources of contamination and eliminate them, with the goal of bringing levels below 10 ppb.
- Levels between 30 ppb and 60 ppb are acceptable short term, but indicate that effort should be made to search out sources of contamination and to control them, thereby bringing future years' harvests, below 30 ppb and finally below 10 ppb.
- Levels above 60 ppb are of health concern.