

PSGR

Physicians and Scientists for Global Responsibility

New Zealand Charitable Trust

Formerly Physicians and Scientists for Responsible Genetics New Zealand

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3 October 2015

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Submission Application A1112 - Food derived from Herbicide-tolerant Corn Line MZHG0JG, Syngenta Australia Pty Ltd, genetically engineered for tolerance to the herbicides glyphosate and glufosinate ammonium.

We are increasingly unconvinced by the biotechnology and food industries' multi-million dollar public relations campaigns designed to deny the facts around transgenic products in a similar fashion to campaigns funded by the tobacco industry.

We question:

- The failure of agencies like the United States' Department of Agriculture (USDA), its Food and Drug Administration (FDA) and Environmental Protection Agency (EPA), to place a higher priority on public health than they place on corporate profit and influence; and
- New Zealand's regulatory authorities in accepting the inadequate standards of the USDA, FDA and EPA without independent research studies into transgenic organisms.

Using the human population as guinea pigs is unconscionable.

With pharmaceuticals a risk benefit judgment needs to be made by a medical professional before any initiation of their use. Pharmaceuticals are clearly distinct and identifiable single agents, whereas food derived using genetic engineering technologies contains transgenes, possibly from multiple sources, with unpredictable changes in plant chemistry and often higher levels of accompanying chemical residues. These are multiple, complex and poorly defined alterations compared with those from a food sourced from non-genetically engineered sources.

'Informed consent' is a basic of patient-physician and subject-researcher relationship. It involves making the participant aware of and verifying understanding of the risks, benefits, facts, and the future implications of the procedure or test to which they are going to be subjected.¹

The definition of informed consent used by US Food and Drug Administration (FDA) is complicated, a virtual "get out of jail free" card. After public outcry, US regulators adopted voluntary labelling of products with transgenic ingredients.¹⁰⁰ In contrast, guidelines approved by the Codex Alimentarius Commission allows countries to label transgenic foods and foods containing transgenic ingredients without breaching international free trade laws.¹⁰⁰

What is fact is that consumers – particularly citizens in the US where some 40 percent of transgenic crops are grown – have been guinea pigs for two decades, given little choice but to ingest multiple unlabelled transgenic foods or food ingredients on a daily basis, year round. With about 94% of US soybean farmers and 72% of corn farmers using Roundup Ready crops, common ingredients in a substantial range of food products, a large majority of processed foods come from glyphosate-resistant crops to some extent. In addition, animals fed glyphosate-resistant crops will bio-accumulate glyphosate and/or glyphosate metabolites, adding to the human end-user's intake.²

The safety of glyphosate use on herbicide-resistant crops has not been substantiated by rigorous, independent scientific research. Studies used to legitimize approvals are generally industry studies, often neither published nor peer-reviewed, and taken over a too-short timeframe. Guidelines issued recently by the European Food Safety Authority call for two-year whole food feeding studies to assess the risks of long-term toxicity.³ This is an improvement on current practices.

It is the active ingredient of a pesticide that is safety tested and not usually the other ingredients. These latter, named adjuvants, are often described by the developer as "inert". In a study published in December 2013, researchers give results from testing the toxicity of nine pesticides involving the active ingredient and in addition the added ingredients. Roundup was shown to be the most toxic of the pesticides tested. The researchers say their results "challenge the relevance of the Acceptable Daily Intake for pesticides because this norm is calculated from the toxicity of the active principle alone. ... Chronic tests on pesticides may not reflect relevant environmental exposures if only one ingredient of these mixtures is tested alone."⁴

A study published in January 2014 confirmed the adjuvants, added to glyphosate formulations to increase their effectiveness, may be more toxic than glyphosate itself.⁵ For example, studies show that the surfactant polyoxyethyleneamine or polyethoxylated tallow amine used in some glyphosate-based formulations is more toxic by the oral route to animals than glyphosate itself.^{6 7}

¹ 'The World's Largest Human Experiment, Monsanto Glyphosate-based Roundup Herbicide', by Madison Ruppert, Part One, GMOs, Roundup and The Monsanto Monstrosity, 10 July 2011 http://www.bibliotecapleyades.net/ciencia/ciencia_monsanto62.htm

² <http://extoxnet.orst.edu/tibs/bioaccum.htm>, <http://www.saferchemicals.org/resources/chemicals/pbts.html>

³ EFSA Journal 2013;11(7):3347 [18 pp.]. doi:10.2903/j.efsa.2013.3347, European Food Safety Authority, Scientific Report of EFSA On request from: European Commission Question number: EFSA-Q-2013-00316 Pub 31 July 2013, Affiliation: European Food Safety Authority (EFSA) Parma Italy, <http://www.efsa.europa.eu/en/efsajournal/pub/3347.htm>.

⁴ 'Major pesticides are more toxic to human cells than their declared active principles', Mesnage et al, <http://www.hindawi.com/journals/bmri/aip/179691/>

⁵ 'Glyphosate commercial formulation causes cytotoxicity, oxidative effects, and apoptosis on human cells: differences with its active ingredient', Chaufan et al, Int J Toxicol. 2014, PMID: 24434723 <http://www.ncbi.nlm.nih.gov/pubmed/24434723?dopt=Abstract>

⁶ http://www.panap.net/sites/default/files/monograph_glyphosate.pdf

After twenty years as a scientist working in the field of genetic engineering, and joining others who have been forced by facts to reverse their position, Dr Jonathan Latham of The Bioscience Resource Project, NY, has spoken out about his concerns at the lack of scientific integrity of transgenic food risk assessments. Latham points to the complexity of biological organisms and their capacity for benefits and harms, and to the incapacity of science to do more than scratch the surface in its understanding of the deep complexity and diversity of the natural world.⁸ Latham says that the industry-generated risk-assessment application documents that governments and regulators rely on to 'prove' safety describe experiments that are often inadequate and sloppily executed. Scientific controls are often missing, and procedures and reagents badly described. The results are often ambiguous or uninterpretable.

Latham also points to recent research which showed commercial soybeans routinely contain quantities of the herbicide glyphosate. Monsanto, the manufacturer of Roundup, the active ingredient of which is glyphosate, once described the quantities as "extreme".⁹

Glufosinate – phosphinothricin manufactured by Bayer - kills plants because it inhibits the important plant enzyme glutamine synthetase, which is also found in fungi, bacteria and animals. As a consequence, glufosinate is toxic to most organisms and a neurotoxin of mammals that does not easily break down in the environment.¹⁰ With transgenic plants, glufosinate is sprayed onto the crop but its degradation in the plant is blocked by the transgene, with slight chemical modification, which is why the transgenic plant is resistant to it. When ingested, glufosinate, although slightly modified, is claimed to be present.¹¹ Despite the health risks associated with glufosinate being greater with transgenes, the implications have been ignored in risk assessments of glufosinate-tolerant crops.

Monsanto continues to advertise glyphosate as safe for humans and pets because neither has the shikimate pathway and therefore should not be impacted by glyphosate. However, human gastrointestinal bacteria do possess this pathway and glyphosate can be toxic to these bacteria.¹²

Neither glyphosate nor glufosinate ammonium are harmless herbicides. For further information, we refer you to our statements on glyphosate: <http://www.psgr.org.nz/glyphosate> and <http://www.psgr.org.nz/glyphosate-calling-for-a-ban>.

⁷ Mesnage R, Defarge N, Spiroux de Vendômois J, Séralini G-E. Major pesticides are more toxic to human cells than their declared active principles. Biomedical Research International, 2014. <http://www.hindawi.com/journals/bmri/aip/179691/>

⁸ <http://www.independentsciencenews.org/health/growing-doubt-a-scientists-experience-of-gmos/>; www.bioscienceresource.org

⁹ Food Chemistry, Vol 153, 15 June 2014, Pages 207–215, 'Compositional differences in soybeans on the market: Glyphosate accumulates in Roundup Ready GM soybeans', Bohn et al 2014 <http://www.sciencedirect.com/science/article/pii/S0308814613019201>

¹⁰ 'Glufosinate binds N-methyl-D-aspartate receptors and increases neuronal network activity in vitro', NeuroToxicology, Vol 45, Dec 2014, pp 38–47,

Lantza et al, <http://www.sciencedirect.com/science/article/pii/S0161813X1400165X>

¹¹ Planta 0992)187:142-151, 'Transgenic plants containing the phosphinothricin-N-acetyltransferase gene metabolize the herbicide L-phosphinothricin (glufosinate) differently from untransformed plants,' Droge et al, 1992,

http://www.researchgate.net/publication/258214844_Transgenic_plants_containing_the_phosphinothricin-N-acetyltransferase_gene_metabolize_the_herbicide_L-phosphinothricin_%28glufosinate%29_differently_from_untransformed_plants. Planta

¹² "Will Richmond Reject Monsanto's Roundup? The Case for Banning Glyphosate," Dr Jeffrey Ritterman, 23 February 2015, <http://truth-out.org/op-ed/item/29244-will-richmond-reject-roundup-the-case-for-banning-glyphosate>.

We urge FSANZ to look at the claims made by Steven Druker in *Altered Genes, Twisted Truth*, the results of fifteen years of exhaustive research showing the lengths to which the US FDA has gone to ignore the warnings of its own scientists about the dangers of transgenic food crops.

The US EPA is also complicit in hiding the dangers of herbicides, including glyphosate. See *Poison Spring: The Secret History of Pollution and the EPA*, E G Vallianatos, Bloomsbury Press, 2014. Vallianatos worked for the EPA from 1979-2004.

It is disingenuous to pretend that the biotechnology industry is concerned about sustainability or safety. It is time regulatory authorities met their duty of care and initiated extensive independent research, meanwhile applying the precautionary principle and stop approvals of foodstuffs involving transgenes. We urge FSANZ to reject Application A1112.


on behalf of

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