Friends of the Earth Canada opposes PMRA's proposal to set new Maximum Residue Levels (MRLs) for glyphosate.

"Proposed measures for PMRL2021-10"

Glyphosate is Canada's most-used herbicide, so levels in food are increasing, sometimes exceeding regulatory limits. With PMRA's proposal, MRLs may be more than doubled for oats and bran, lentils and peas, as well as nuts (almonds, pecans and walnuts, mostly coming from the US), or almost quadrupled for 25 types of beans such as chickpeas, kidney beans and pinto beans.

No examination of health effects

We maintain that the proposed decision on MRLs cannot be made without due consideration to health risks. PMRA provides no health-based justification to increase herbicide contamination. Indeed, health effects were not examined. PMRA's proposal PMRL2021-10 and related Evaluation Report for Category B, Subcategory 5.0 aim to adjust the regulation to suit increased use of glyphosate-based herbicides. Friends of the Earth views this as a trade-oriented proposal rather than one that is grounded in the protection of human health and the environment as required by the Pest Control Products Act (PCPA). The PCPA requires the Minister to use the precautionary principle, which is defined as: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent adverse health impact or environmental degradation."

Safety of glyphosate? Complete lack of consensus within the scientific community and significant concerns on validity of registrant/industry-funded research

There is a complete lack of consensus within the scientific community on the safety of this chemical for widespread use, and we challenge the attempt by the PMRA to brand this proposed decision as one based on consumer safety and robust science.

The US EPA considers glyphosate as "not likely to be carcinogenic to humans." While the International Agency for Research on Cancer (IARC) has classified glyphosate as "probably carcinogenic to humans (Group 2A)."

EPA asserts that there is no convincing evidence that "glyphosate induces mutations in vivo via the oral route." By contrast, IARC concludes there is "strong evidence" that exposure to glyphosate is genotoxic through at least two mechanisms known to be associated with human carcinogens, namely DNA damage and oxidative stress.[i,ii] Genotoxicity studies indicate the risk of cancer and reproductive damage posed by a chemical.

In a review of the studies cited by both organizations, Benbrook et. al[iii] concluded that the differences are likely due to:
(1) in the core tables compiled by EPA and IARC, the EPA relied mostly on registrant-commissioned, unpublished regulatory studies, 99% of which were negative, while IARC relied mostly on peer-reviewed studies of which 70% were positive (83 of 118).

(2) EPA's evaluation was largely based on data from studies on technical glyphosate, whereas IARC's review placed heavy weight on the results of formulated GBH and AMPA assays.

New scientific analysis shows unreliability of industry-funded studies

In a recent development that PMRA must take into account, a new scientific analysis concludes that the European Food Safety Authority's (EFSA) claim that glyphosate is not genotoxic cannot be justified on the basis of manufacturers' studies.

Of the fifty-three industry-funded studies used for the EU's current authorization (2017) of glyphosate, thirty-four were identified as "not reliable", seventeen as "partly reliable" and only two studies as "reliable" from a methodological point of view. This study calls into question the reliability of industry-funded studies claiming the absence of glyphosate genotoxicity which were the basis for the earlier approval of glyphosate on the EU market.

It is now alleged that the German Health Authority BfR and EFSA, those public authorities involved in the 2017 authorization procedure – wrongfully accepted these industry studies as key evidence of the absence of glyphosate genotoxicity. It appears that EFSA used this flawed science as their basis to contradict the International Agency for Research on Cancer (IARC)'s 2015 conclusion that glyphosate does in fact "probably cause cancer".

Scientific basis for challenging PMRA's current proposal to increase the MRL for glyphosate

Human consumption of glyphosate has increased rapidly in the past two decades, with a thirteenfold increase in urinary glyphosate concentration over this period. [iv]

Glyphosate residues are ubiquitous in our food system, and are detectable at significant levels in in surface water, sediments and soil, respirable dust emitted by agricultural soil, a variety of crops at harvest and processed food. Furthermore, glyphosate and its metabolites are found in human urine samples, maternal and umbilical cord serum, and breast milk samples, indicating not only bioaccumulation in human tissue but multi-generational fetal transfer of trace pesticides.[v]

Several studies have reported adverse effects of glyphosate as an endocrine disruptor with consequences for female and male murine reproductive development, at both low and environmentally relevant doses[vi, vii, viii]. Further reports have also demonstrated that glyphosate exposure results in epigenetic changes to cancer- and metabolism-related genes[v], oxidative stress and tissue damage[ix, x, xi], as well as impaired immune signalling and enhanced inflammation.[xii]

Aside from disrupting sexual maturation, maternal glyphosate exposure has also been shown to cause behavioural abnormalities in offspring.[xiii]

Epidemiological studies have also found associations between chronic glyphosate exposure and cancer[xiv], as well as kidney disease and development of neurological disorders.[xv]

Glyphosate inhibits the shikimate pathway, which is involved in essential amino acid synthesis by plants and bacteria. This can be linked to a variety of detrimental health effects given the role of the microbiome in regulating host physiology. Environmental concentrations (0.1 ppb) of glyphosate are sufficient to disrupt the microbiome of rats in a manner similar to disturbances observed in liver disease.[xvi] Disruption of the microbiome and microbe-brain signalling has demonstrable impacts on behaviour and neural development.[xvii]

Friends of the Earth's position

Unless the use of glyphosate and chronic, multi-generational exposure can be proven to have no detrimental effects on human health, the precautionary principle requires all due caution including:
rejecting the proposal to increase the MRL for glyphosate,
reducing the MRL for glyphosate to zero, and
initiating a Special Review on glyphosate.

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