Health Canada
Santé Canada

Pest Management Regulatory Agency
Agence de réglementation de la lutte antiparasitaire

Reference No. 2017-3047

Please note that this decision letter has been superseded by the redetermination letter of September 29, 2022.

Health Canada / Santé Canada

Pest Management Regulatory Agency / Agence de réglementation de la lutte antiparasitaire

JAN 11 2019

Reference No. 2017-3047

Mary Lou McDonald
Safe Food Matters Inc.
9 Boardwalk Dr. Unit 107
Toronto, ON
M4L 6T1

Dear Ms. McDonald,

Re: Notice of Objection to Re-evaluation Decision RVD2017-01, Glyphosate

Your notice of objection, filed under subsection 35(1) of the *Pest Control Products Act* (PCPA), regarding the re-evaluation decision for Glyphosate has now been reviewed and assessed in accordance with the PCPA and *Review Panel Regulations*.

The purpose of a notice of objection is to identify the area of science supporting the re-evaluation decision to which objection is taken, to provide the scientific basis of the objection and to request that the area of science in question be referred to a review panel for reconsideration and recommendation.

The PMRA has taken all reasonable measures to ensure impartiality in determining if a panel should be established. The notice of objection, including the scientific rationale, was assessed by a team of PMRA evaluators who were not involved in the original re-evaluation decision. This team provided recommendations as to the requirement for a review panel based on the validity and the scientific plausibility of the issues raised in the notice. The factors to be considered in determining whether to establish a review panel include:

- whether the information in the notice raises scientifically founded doubt as to the validity of the evaluations, on which the decision was based, of the health and environmental risks and the value of the pesticide; and
- whether the advice of a review panel of expert scientists would assist in addressing the subject matter of the objection.

The following information was received and reviewed in support of your notice of objection:

- Notice of Objection Form
- Notice of Objection document
- Glyphosate in Chickpea - CFIA tests

- Glyphosate in Wheat Bran - CFIA

The information which you submitted in support of your objection does not meet either of those factors and, accordingly, does not provide a basis for the establishing of a review panel. As a consequence, a review panel will not be established to reconsider the regulatory decision in response to your request.

The issues raised in the notice of objection are attached to this letter are **in bold text**, followed by PMRA responses which are not (see Attachment 1).

Should you have any questions regarding this letter, please contact Charles Smith at 613-736-3625 or charles.smith@canada.ca. Please quote Reference Number 2017-3048 in any correspondence regarding the Notice of Objection to re-evaluation of glyphosate.

Yours truly,

Peter Brander
Chief Registrar
Pest Management Regulatory Agency

Attachment 1

Comment 1: A comment was received which objected to reductions of the safety factor without scientific rationale with regards to the serious endpoint of cardiovascular malformations in the rabbit developmental toxicity study. The objector indicates that the tempering of the concern surrounding the "serious endpoint" based on the presence of maternal toxicity does not appear to be permitted, based on the approach outlined in SPN2008-01.

PMRA Response:

While SPN2008-01[a] does not explicitly state that there is a reduced level of concern when malformations occur in the presence of maternal toxicity, this scenario does fall within the purview of the first paragraph of Section 4.1 of SPN2008-01:

> Under the new *Pest Control Products Act* (PCPA), the PMRA must apply a default 10-fold factor (the PCPA factor) unless the PMRA concludes, based on reliable data, that a different factor is appropriate for the protection of infants and children. Determination of the magnitude of the factor involves evaluating the completeness of the data with respect to exposure of and toxicity to infants and children as well as potential for prenatal or postnatal toxicity (see Figure 2). Incomplete toxicology databases are not equally incomplete and all prenatal and postnatal toxicities are not of equal concern. For these reasons, the PMRA makes specific case-by-case determinations as to the size of the PCPA factor if reliable data permit. An integrative approach is taken to optimize use of all available information. A PCPA factor less than or equal to 10-fold or, in very rare circumstances, greater than 10-fold, may be employed in an assessment. Given the extensive data typically available for a given pesticide, the PMRA believes that in most instances, there will be sufficient reliable data to conduct an individualized assessment of the factor necessary to assure the safety of infants and children. [b]

In determining whether the PMRA can reduce the PCPA factor, the PMRA takes into account contextual information such as the impact of a chemical on the health of the maternal animal. Concern is lessened when fetal toxicity occurs in the presence of maternal toxicity since maternal toxicity, in and of itself, can result in effects on the fetus. Decreased maternal body weight or body weight gain at sensitive stages of development can result in changes in the fetus independent of direct chemical insults on the fetus. For some effects, protecting maternal health will serve to limit fetal exposure and toxicity. For this reason, a higher level of concern reflected

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[a] PMRA (Pest Management Regulatory Agency), 2008, Science Policy Note (SPN2008-01): The Application of Uncertainty Factors and the *Pest Control Products Act* Factor in the Human Health Risk Assessment of Pesticide. Available online from http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_pol-guide/spn2008-01/index-eng.php [Last accessed August, 2018]

[b] Ibid.

in a PCPA factor of 10-fold, is accorded to serious effects that are seen in the fetus but not in the maternal animal.

This is reflected in page 17 of PRVD2015-01, which states "Overall, the endpoints in the young were well characterized. The increased incidence of fetal cardiovascular malformations noted in a rabbit developmental toxicity study was considered a serious endpoint. However, the concern regarding the serious nature of this effect was tempered by the presence of maternal toxicity at the same and lower dose levels in this study. Therefore, the *Pest Control Products Act* factor was reduced to three-fold when this endpoint was used to establish the point of departure. For all other scenarios, the *Pest Control Products Act* factor was reduced to one-fold since there were no residual uncertainties with respect to the completeness of the data, or with respect to potential toxicity to infants and children."

Comment 2: A comment was received which indicated that the early application of glyphosate as a desiccant or the application of glyphosate when moisture content is too high resulted in exceedances of the Maximum Residue Limits (MRLs) for some crops. It also referenced data obtained from the Canadian Food Inspection Agency (CFIA), which showed exceedances in a cereal and legume. Safe Food Matters Inc. stated that since food containing a pesticide residue that does not exceed the established MRL does not pose a health risk concern; foods that do exceed the established MRL do pose a health risk and thus endanger human health.

PMRA Response:

The PMRA assessed the scientific literature cited in support of this comment. The cited references show that residues of glyphosate increase when applied as a preharvest treatment when the moisture content in the crop is more than 30%. However, the labels of registered glyphosate products in Canada indicate that application must be conducted at less than 30% moisture content, and the residue data used to establish MRLs were based on this use pattern. In other words, as indicated in the response to comments provided in the final re-evaluation decision document for glyphosate (RVD2017-010), glyphosate residues on foods have been measured in field trial studies that are required to register a pesticide for specific uses, as per PMRA Residue Chemistry Guidelines (Dir98-02). These field trial data were used for the establishment of maximum residue limits (MRLs) for glyphosate, that is, the maximum legally allowed amount of glyphosate residue that may remain on foods when glyphosate is used according to label directions.

With respect to the actual MRLs, they are enforced by law under the *Food and Drugs Act*. The conditions of registration must be observed in all circumstances. It is an offence under the PCPA if the product is not used in accordance with the conditions of registration, including the use directions on the label. MRLs are set at a level well below the amount of residue that could present a human health concern. However, an exceedance of an MRL does not automatically equate to a potential health risk of concern. Nevertheless, when pesticide residue levels exceed the MRL, follow-up actions for non-compliant products, taken by the Canadian Food Inspection

Agency (CFIA), are initiated in a manner that reflects the magnitude of the health concern. Actions may include further analysis, notification of the producer or importer, follow-up inspections, additional directed sampling, and recall of products.

In the case of the glyphosate monitoring undertaken by the CFIA, as indicated in their report, the non-compliant data were evaluated and no human health concerns were identified. The CFIA will continue to monitor for the presence of this commonly used herbicide to help ensure the safety of the Canadian food supply.

Comment 3: A comment was received which stated that it would appear that an examination of the risks arising from dietary exposure to crops that have been desiccated with glyphosate was not part of the re-evaluation, and maintained that such an examination is necessary, particularly given that mechanisms by which MRLs can be exceeded in desiccated crops, and that data from the CFIA indicates that exceedances are occurring.

PMRA Response:

PRVD2015-01, Appendix V, page 99, under "Supervised residues trial studies" states, "The data support a maximum seasonal rate of 6.2 kg ae/ha in pre-emergent applications and 0.9 kg ae/ha **in preharvest applications** for forage crops (PHI 3-7 days) and all other crops (PHI of 7-14 days)." To further clarify, preharvest applications are the desiccant uses. Thus, the dietary risk assessment conducted in the re-evaluation encompasses all registered food uses, including desiccated crops.

Comment 4: A comment was received which expressed concern regarding PMRA's use of CSFII – 1994-1996, 1998 Continuing Survey of Food Intakes by Individuals, and United States WWEIA consumption data to assess dietary risk in the re-evaluation of glyphosate. Safe Food Matters Inc. argued that a dietary risk assessment using these data is inadequate because of the evidence that current levels of consumption and production of desiccated legumes like chickpeas and lentils has increased dramatically. Accurate information showing the increase in consumption would increase the numbers for the calculations of glyphosate exposure through diet.

PMRA Response:

The PMRA's dietary exposure assessments (for new active ingredients and re-evaluations, such as for glyphosate) rely upon the "Dietary Exposure Evaluation Model - Food Commodity Intake Database™ (DEEM-FCID™ Version 2.14) program, which incorporates consumption data from USDA's Continuing Surveys of Food Intakes by Individuals (CSFII), 1994-1996 and 1998". Prior to using the CSFII, the PMRA compared the exposures from the consumption data from CSFII and the National Health and Nutritional Examination Survey, What We Eat in America (NHANES/ WWEIA). There was consistency in the food intake pattern and no significant differences in exposure were observed. In turn, even with more recent versions of DEEM with

updated consumption data, dietary exposure is not expected to be of concern. It should be noted that dietary estimates are also well below the acceptable daily intake (ADI), as well as the acute reference dose (ARfD): 20 – 70% of the ADI for all segments of the population, 31% of the ARfD for females 13 – 49 years of age, and 12 – 45% of the ARfD for other population subgroups.

It is also important to note that the residue input in DEEM is not directly related to the use scenario of the pesticide. However, if a pesticide is registered for several different use scenarios (e.g. pre-emergent use, early post-emergent use and desiccant use), then the residue level input in DEEM (a single value in ppm) would be the highest residue observed among all the scenarios tested. Therefore, if the use of a desiccant results in the highest residue level, it will be assumed that all legume crops that are consumed contain residues from that desiccant use. In addition, the dietary risk assessment conducted for the glyphosate re-evaluation assumed 100% of registered crops to be treated, which is also a conservative assumption.

Comment 5: A comment was received which referenced the 2017 Guide to Crop Protection published by the Saskatchewan Ministry of Agriculture, which stated that the use of glyphosate for the use of "Crop Staging for Preharvest Applications" on the crops canary seed, mustard, chickpea, lupin and faba bean is registered under the URMULE program, and because of this "the manufacturer assumes no responsibility for herbicide performance. Those who apply glyphosate to chickpea, lupin, faba bean, canary seed, camelina or mustard do so at their own risk."

Safe Food Matters Inc. claimed that there was no indication in the re-evaluation of glyphosate that the use of desiccation/ pre-harvest management on these additional crops has been assessed for health risks or that MRLs have been established for these crops subject to this use.

PMRA Response:

URMULE submissions reviewed by the PMRA assessed the health risk from glyphosate residues as a result of preharvest use on camelina (Sub. No. 2010-6219), pearl millet (Sub. No. 2009-2317), canary seed (Sub. No. 2014-5021), mustard (Sub. No. 2010-1153), chickpea (Sub. No. 2015-1580), and lupin and faba bean (Sub. No. 2005-2797) on the Monsanto Roundup WeatherMax with Transorb 2 Technology Liquid Herbicide (Reg. No. 27487) label. Residues in food commodities resulting from the desiccant use of glyphosate on these crops were determined to not pose health risks of concern to any segment of the population, including infants, children, adults and seniors.

MRLs are specified under the PCPA for gold of pleasure seeds (camelina) and mustard seeds (condiment type and oilseed type) at 10 ppm, based on residue data for canola, the representative crop for oilseeds. MRLs are not established specifically for chickpea, dried lupin, and dried faba bean since residues on these crops are covered under the existing MRL for beans (4 ppm). Given

that the use on pearl millet grain is for animal feed only, an MRL is not established for this commodity. In addition, an MRL is not established for canary seed, since it is not a food use.

As mentioned above in the response to Comment 3, the dietary risk assessment conducted in the re-evaluation encompasses all registered food uses, including all registered desiccated food crops such as camelina, mustard, chickpea, lupin and faba bean.

Comment 6: A comment was received which states that the risk to human health from consuming crops that have been desiccated with glyphosate when moisture content is high is not mitigated by the proposed label amendments from the re-evaluation. It argues that there is no reasonable certainty that no harm to human health or future generations will result from dietary exposure to glyphosate, given that

1) **no label statements were proposed that would mitigate risk to human health from desiccation, and**
2) **any such label statements would not with reasonable certainty be effective because of the subjective content of any label and the unpredictability of the weather which can affect moisture content**

PMRA Response:

As indicated in response to Comment 2, directions for use on labels already indicate when applications should be made for preharvest use with specific plant growth stage (with associated pictographs) to describe precisely the application timing that corresponds to 30% moisture content.

Comment 7: A comment was received which referenced the aggregate risk assessment in PRVD2015-01 conducted for children 1 to less than 2 years old, examining post-application dermal exposure of glyphosate and incidental oral exposure (hand-to-mouth) from performing postapplication activities in treated lawns/turf + chronic dietary (food and drinking water). This aggregate exposure scenario initially assumed a glyphosate application rate of two applications with a seven day interval. At that application rate, the aggregate margin of exposure (MOE) for children (1 to < 2 years old) did not reach the target of 100. Therefore, refinements to the risk assessment were required.

Safe Food Matters Inc. claimed that in response to this finding, the PMRA changed the aggregate assessment without a reliable scientific rationale, to one application of glyphosate with a seven-day time-weighted turf transferable residue average for the entire aggregate assessment for all populations. The average residues of glyphosate were calculated over a seven-day span, rather than assuming exposure to residues immediately after application. In addition, Safe Food Matters Inc. stated that this refinement of the aggregate risk assessment in effect reduced the 10-fold safety factor by changing the application rates, since the 10-fold factor would have been exceeded had the application rates stayed the same.

PMRA Response:

The approach of conducting the aggregate risk assessment for children 1 to less than 2 years old exposed to glyphosate followed the method described in Science Policy Note SPN2003-04: *General Principles for Performing Aggregate Exposure and Risk Assessments*.

As described in PRVD2015-01, in the initial risk assessment for children 1 to <2 years old exposed to glyphosate, the target MOE of 100 was not reached when aggregating chronic dietary exposure (food and drinking water) and postapplication exposure (dermal and incidental dietary) from entering turf treated with two applications, 7 days apart. As per SPN2003-04, "the PMRA believes, however, that the co-occurrence of high-end food, drinking water and residential exposure scenarios will often be impossible or, at best, highly unlikely." As such, the assumptions in the aggregate risk assessment were adjusted to represent a more realistic scenario, which included the use of the following:

- Canadian MRLs instead of American tolerances/Codex MRLs for barley, oats and wheat, since 99% of these crops consumed in Canada are produced in Canada;
- A typical application pattern of only one application at the maximum application rate; and
- a 7-day time-weighted average turf transferrable residue value.

Using the parameters described above, the refined aggregate risk assessment for children 1 to <2 years old resulted in a calculated MOE that reached the target MOE of 100. The target MOE of 100 was not reduced in the aggregate risk assessment.