PMRI_2021-10, Glyphosate

Comment by the Saskatchewan Network for Alternatives to Pesticides (SNAP Inc) in July 2021
by Paule Hjertaas, President and spokesperson
15 Olson Place.
Regina, Saskatchewan, S4S 2J6
www.snapinfo.ca

1. **Health**

The MRL level is driven by agricultural practices, not by health protection. Glyphosate is a potent chemical – a herbicide, an antibiotic and a chelator – affecting human and environmental health. This proposed increase of residues in food is unacceptable and impossible to defend from a health point of view. Glyphosate kills bacteria and depletes beneficial species in the human gut microbiome, causing dysbiosis which may escalate to inflammatory bowel disease. The International Agency for Research on Cancer (IARC) found that glyphosate is a probable human carcinogen. It has been linked to the development Parkinson Disease (1) and found to cause disease across several generations (2) and more (3). As a chelator, glyphosate binds with and may mobilize metals in soil. Toxic metals such as cadmium (which is naturally high in many Prairie soils and Canadian potash fertilizer) is hyper-accumulated in grains and can exceed international MRLs (cadmium is not listed among Canada's maximum levels for chemical contaminants in food).

The categories of people most affected by food residues are:
1- Canadian children. Glyphosate in childrens' cereals (in oats and bran) are already at significant levels.
2- Organic consumers purchasing organic food to avoid pesticides for health or ethical reasons. As the testing protocol for organic products is based on 5% of the MRL, the proposed increase to the national MRLs for the above products means that organic products will have an increased allowance of glyphosate permitted. As organic consumers mainly buy organic to avoid pesticides, this is an unacceptable increase.
3- Vegetarians, vegans and everyone who gains protein from non-organically grown legumes and nuts are at risk of consuming more glyphosate, even when they eat organically grown crops.

These are the direct effects of increased residue limits. There is also that increased MRLs will increase use, therefore increasing environmental contamination and therefore exposure through increasing glyphosate and its byproducts in soil, air, dust, rain and water. (see comment on environment)

References

1. **Glyphosate in Roundup Linked to Parkinson's Disease** (*Beyond Pesticide*s, May 15, 2020)
2. New study finds glyphosate causes disease across several generations (The Organic and non-GMO Report, May 2, 2019) "But writing in the journal Scientific Reports, the researchers say they saw "dramatic increases" in several pathologies affecting the second and third generations.

3. More references on glyphosate can be found at https://www.snapinfo.ca/info/pesticide-fact-sheets/glyphosate-roundup. Also links to other parts of the web site.

Environment

1. Glyphosate is already ubiquitous in agricultural regions. Glyphosate is in the soil, air, water (1,2) and waterways, drifting in dust (3) and falling in the rain in agricultural areas in North America. Higher MRLs will increase contamination on and beyond farms, and will put even more glyphosate into our food. According to the pesticide industry many years ago, Saskatchewan used 33-36% of all pesticides sold in Canada. The only publicly available Saskatchewan sales data (4) with a maximum of only 70% commercial sales reported (2001-03) indicated 10.5 million kg of commercial pesticides sold. Even then, glyphosate was around a half of sales (around 5.25 million kg/year). To say that Saskatchewan residents live is a toxic soup is an understatement.

1.As an antibiotic in the soil, glyphosate-based herbicides (GBHs) causes shifts in the soil microbiome, with increased fungi and mycotoxins, including Fusarium spp (e.g., infecting wheat). This contamination can make crops unsalable. Mycotoxins pose many risks to human and animal health, affecting the immune system, nervous system, liver and child development, and causing cancers.

2. **Glyphosate and Other Weed Killers Create Antibiotic Resistant Bacteria in Agricultural Soils** (*Beyond Pesticides*, February 24, 2021) 'Soil sprayed with weedkillers *glyphosate*, *glufosinate*, or *dicamba* are likely to contain higher amounts of antibiotic resistant bacteria, according to research published earlier this month in the journal *Molecular Biology and Evolution*

3. GBHs perturb the balance of microbes in the bee gut, potentially exacerbating pollinator decline. Pollinators are essential for legume production.

4. **Long-Term Roundup Exposure Found to Harm Keystone Wildlife Species** (*Beyond Pesticides*, January 6, 2021) "The problem is that much of the evidence is rooted in outdated toxicity tests which only look at the number of animals that die on exposure to extremely high concentrations of these chemicals," Dr. Orsini said. "These tests also overlook the pathological effects arising from long-term exposure to low doses.

5. **Ubiquitous Herbicide Glyphosate/Roundup Threatens Nearly All Endangered Species, Says EPA** (*Beyond Pesticides*, December 4, 2020) From the 'release of the *Environmental Protection Agency's (EPA's)* draft biological evaluation (BE) of *glyphosate*.

6. **Glyphosate in chicken poop used as fertilizer is hurting food production, researchers say** (US Right to Know, September 9, 2020 by Carey Gillam) ' Because there are glyphosate residues in human and animal food, detectable glyphosate levels are commonly found in human urine and animal manure.

7. As mentioned before: as a chelator, GBHs binds with and may mobilize metals in soil. Toxic metals such as cadmium (which is naturally high in many Prairie soils and Canadian potash fertilizer) is hyper-accumulated in grains and can exceed international MRLs. It likely also affects the balance of nutrients in sprayed foods.

8. An increase in glyphosate use will definitely increase environmental and food residues of other pesticides as it is used more and more often in combination with other pesticides on gmo crops. This is not a review of gmo crops but more of those is a negative development, contrary to sustainability.

9. more indirect effects are found all the time. **The main ingredient in RoundUp doesn't just kill plants. It harms beetles, too.** *Glyphosate seems to interrupt a key symbiotic relationship in sawtooth grain beetles.* (Philip Kieffer, Popular Science, May 13, 2021) 'But sawtooth grain beetles rely on a symbiotic relationship with a particular type of (unnamed) bacteria to build their shells. That bacteria in turn uses the shikimate pathway to manufacture the raw building blocks the beetles need. *Glyphosate* appears to kill off those partners.

References

1. Compared to the U.S. Canada does little environmental monitoring. https://www.snapinfo.ca/issues/water includes research and references to all Saskatchewan pesticides in water research. 'Glyphosate, including its degradation product AMPA, was detected in >50% frequency only in wetlands on minimum-tillage farms where the mean concentration (1278 ng L−1) was higher than the concentration of other herbicides. ' (**Concentrations of Herbicides in Wetlands on Organic and Minimum-Tillage Farms**)

2.**U.S. Geological Survey Finds Mixtures of Pesticides Are Widespread in U.S. Rivers and Streams** *(Beyond Pesticides*, September 24, 2020) 'A new report by the *U.S. Geological Survey (USGS), National Water-Quality Assessment (NAWQA) Project*

3. **Implications for Human Health: Glyphosate-Related Soil Erosion Re-Releases Toxic Pesticides from Soil** French West Indies study. (*Beyond Pesticides*, March 4, 2021) A new study finds glyphosate use stimulates soil erosion responsible for releasing banned, toxic pesticide chlordecone (Kepone), which was used in banana production. ... Researchers note, "*Chlordecone* fluxes drastically increased when *glyphosate* use began, leading to widespread ecosystem contamination.

4. **Pesticide Sales in Saskatchewan 2001-03** available at https://www.snapinfo.ca/info/pesticide-sales-in-sk-2001-03

3. **Organic Agriculture and Sustainability**

1. Increased use of GBHs will further impact Canadian Organic Agriculture.
Organic agriculture is a very legitimate part of Canadian agriculture and has already been negatively impacted through many crops they cannot grow due to widespread gmo contamination (canola in the Prairies, for instance) It is a form of agriculture that tries to improve the soil and works towards sustainability.
2. Organic commodities are already challenged by glyphosate contamination from drift, dust, possible contamination during shipping / handling and other consequences of ubiquitous environmental contamination from non-organic agriculture [2014, COTA Glyphosate Residue report]. **Economic Impact of Glyphosate Contamination on Organic Production in Saskatchewan** (COTA Organic summit, November 18. 2019)
There are likely other pesticides which are problems but they have not been studied.
3. It is time the PMRA joins the government of Canada's goals of sustainability and climate change. Glyphosate use is antithesis to these goals.

Glyphosate-Based Herbicides and Sustainable Agriculture Do Not Mix! (*Beyond Pesticides*, April 29, 2021)
'*Glyphosate*-based herbicides (GBHs) are incompatible with sustainable agriculture goals, according to a recent scientific literature analysis by scientists at Tufts University, Massachusetts

Recommendations and Conclusion

SNAP has cited a number of studies indicating serious health and environmental concerns from glyphosate. Increasing the glyphosate MRLS in several commodities is unacceptable and would worsen outcomes in all these fields.

SNAP supports the NFU's recommendations

- 'That proposed MRL increases for glyphosate are not implemented
- Amend all labels for herbicides with glyphosate active ingredient to prohibit pre-harvest spraying
- Effective MRL enforcement and compliance measures be implemented to safeguard Canada's markets and international reputation
- That the Canadian Grain Commission monitor export shipments for MRL compliance
- That the CFIA increase its MRL monitoring of foods and commodities and promptly publish both reports and raw data
- That the PMRA conduct an investigation into linkages between glyphosate application and subsequent fusarium infection, that this investigation be done by scientists with no ties to the crop protection sector, and that results be published in full on a publicly accessible website.
- That Health Canada investigate the epigenetic impacts of glyphosate exposure on humans, livestock, plants and soil micro-biota, that this investigation be done by scientists with no ties to the crop protection sector, and that results be published in full on a publicly accessible website.'

In addition, it is imperative that the PMRA rids itself of industry influence and starts considering independent studies at a level equivalent to the limited scope industry studies.

The Canadian regulatory system is based on ‘the dose makes the poison’ rather than prevention. This concept has been found seriously faulty in the last 30 years and tens of thousands of research papers indicating low-dose, endocrine, epigenetic and other indirect effects happening well below the NOEL (no effects level). Selectively ignoring or downplaying newer health and environmental research towards an economic goal that only serves industry, not the Canadian public, children, organic industry and consumers is a major mistake. It does noting to protect us, and undermines our confidence in the PMRA. Increasing glyphosate MRLS in several commodities is another sigh that the PMRA has forgotten that it was formed for regulation, not rubber-stamping. Be part of the solution towards a sustainable society.