REGISTERED CHARITY No. 704

Greenrock.org

Changing the Mindset

The Problems with Glyphosate

Greenrock takes note of the Government Report[1] recommending the ban on the weed killer Rodeo to be lifted[2].

We are opposed to this recommendation, and consider the report to have considered the problematic nature of Rodeo with too narrow a brief. We echo the concerns voiced by BEST last week.

The report solely looks to whether the use of Rodeo may cause significant adverse health effects in humans. Reducing the scope of the concern around Rodeo to solely a health perspective fails to consider the wider environmental problems surrounding the use of this – and similar glyphosate herbicides.

On the health effects themselves, we note the following:

- The World Health Organisation's cancer agency, the International Agency for Research on Cancer (IARC) determined in early 2015[3] that glyphosate, the active ingredient in Rodeo, is '*probably carcinogenic to humans*' and that a '*positive association has been observed for non-Hodgkin lymphoma*'; furthermore there is '*sufficient evidence in experimental animals for the carcinogenicity of glyphosate*'.

    - This study also found that there is '*strong evidence that exposure to glyphosate or glyphosate-based formulations is genotoxic based on studies in humans in vitro and studies in experimental animals.*'

    - And that there is '*strong evidence that glyphosate, glyphosate-based formulations, and aminomethylphosphonic acid can act to induce oxidative stress based on studies in experimental animals, and in studies in humans in vitro.*'

- While a subsequent early 2016[4] co-analysis between the UN Food & Agriculture Organisation (FAO) and WHO contradicted this earlier WHO report concluded that glyphosate was '*unlikely to pose a carcinogenic risk to humans from exposure through diet*', we also note that this study has since been called into question[5] as a result of a clear conflict of interest, with the scientists carrying out that review to have been also dependent on funding from Monsanto.

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1 https://www.gov.bm/sites/default/files/Glyphosate%20Monitoring%20Study%20Draft%20Report%20Nov%202016.pdf

2 http://www.royalgazette.com/news/article/20161223/call-for-weed-killer-ban-to-be-lifted

3 http://monographs.iarc.fr/ENG/Monographs/vol112/mono112-09.pdf

4 http://www.who.int/foodsafety/jmprsummary2016.pdf?ua=1

5 https://www.theguardian.com/environment/2016/may/17/unwho-panel-in-conflict-of-interest-row-over-glyphosates-cancer-risk

Suite 324, 48 Par La Ville Road, Hamilton, HM11 Bermuda • execdir@greenrock.org ☎ +1.441.747.7625

- Ingestion through diet is not the only possible route by which glyphosate may be carcinogenic, however the Government study did note that the chemical '*was present in most of the foodstuffs sampled, however the levels are considered to be safe according to the Acceptable Daily Intake (ADI) stipulated by the WHO at 0.3 milligrams per kilogram body weight per day and the European Food Safety Agency (EFSA) most stringent Acceptable Operator Exposure Level (AOEL) of 0.1 mg/kg bw per day*'.

- While we welcome that the levels of glyphosate are below those levels, we note that Antoniou, et al (2012)[6], concluded that the ADI should be set much lower, at 0.025 mg/kg bw. We acknowledge that the highest concentration the Government found in their study of just six food products was below this, at 0.00114 mg, however, we express caution at relying on US and EFSA standards which run counter to the evidence base. Based on the literature, consumption of just over 1kg (of oatmeal) would breach the acceptable limit – rather than the 5kg the study cites using the EFSA limit.

- The study commissioned by the Government does not look at concentrations of glyphosate in human tissue. Studies elsewhere have found that 44% of all samples from volunteers in 18 countries were found to contain traces of this chemical, while not being able to determine the source for these concentrations[7].

Beyond the health impacts on humans, we believe that it is necessary to consider the wider environmental impacts of glyphosate.

While the study does review the concentration of glyphosate in water and soil, and finds these levels to be acceptable and '*not considered to be creating any measurable environmental impact to the groundwater or pond water'* we have concerns about wider impacts on biodiversity and, in particular, the impact on pollinators like bees.

As regards bees, which are already stressed in Bermuda, the literature indicates that glyphosate negatively impairs bee's abilities to successfully navigate, with potential long-term negative consequences for bee populations and individual hives[8]. While we don't believe that glyphosate is the 'smoking gun' behind the decline of bee populations, we do believe it is a factor – and a factor that we can remove.

Greenrock recommends the precautionary principle as regards glyphosate. This principle denotes a duty to prevent harm, when it is in our power to do so, even when all the evidence is not in.

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[6] https://www.omicsonline.org/teratogenic-effects-of-glyphosate-based-herbicides-divergence-of-regulatory-decisions-from-scientific-evidence-2161-0525.S4-006.pdf

[7] https://www.foeeurope.org/sites/default/files/glyphosate_studyresults_june12.pdf

[8] http://www.boerenlandvogels.nl/sites/default/files/Effects%20of%20Glyphosate%20on%20Honey%20Bee%20Navigation.pdf

In particular we note the definition of the principle by the 1998 Wingspread Conference:

"*When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.*"

From our perspective there is enough scientific doubt concerning the impact of glyphosate from both a human health and environmental perspective (particularly as regards bees) to justify the banning the use of glyphosate in Bermuda.

Greenrock supports the continued ban on the use of glyphosate in Bermuda as a result – and we would like to see this extended to include neonicotinoids[9], which are also a contributory factor in the decline of bee populations.

[9] http://www.bbc.com/news/science-environment-37089385