Reviewer’s report

Title: THE EVIDENCE OF HUMAN EXPOSURE TO GLYPHOSATE: A Review

Version: 0  Date: 12 Nov 2018

Reviewer: Charles Benbrook

Reviewer's report:

This is an exceptionally important paper that also is exceedingly well done and clear. Congrats to the team for doing an important service for the scientific, regulatory, and farm communities. I have a few very minor suggestions below, but one important request and suggestion that might lead you to add a few sentences to this paper, and/or stimulate your thinking if/as you continue to work in this area. I work in this area extensively and know most of the papers included in the review. BY FAR the most important information in your review that is new to me is your discussion of the distribution of GLY levels in the Thailand study (lines 50-58). This is so important because, around the world, 10s of millions of people are occupationally exposed on a daily basis, or exposed via some unusual circumstance. These exposure episodes range from a modest increase -- 2-X to 5-X increase compared to a "typical" day's exposures (and likely explain the high-end residue levels reported in your paper) -- to 100-X or maybe even 1,000-X increases in exposure. Given the relatively low acute toxicity of GBHs as diluted and sprayed, it is almost unimaginable that a person could receive a fatal dose, but it is virtually certain that 100,000s of times every day around the world a person spraying a GBH, or in an area where a lot has been applied, is experiencing a very-high exposure episode. E.g., a farmworker in a Costa Rica cane field, harvesting the cane by hand, in a field sprayed with a GBH 8 days before and then burned; a person with a backpack sprayer that has a slow leak where the hose enters the tank, slowly drenching his/her back and legs, while the applicator thinks he/she is just sweating; an Iowa farmer fixing plugged nozzles on a sprayer; a child hugging/playing with a dog that has just rolled around in a recently sprayed area, etc etc. These unusual, very high exposure scenarios are likely implicated in most of the documented GBH exposure-chronic health impacts. Please consider adding a few sentences noting that not one exposure study, nor ANY regulatory assessment done anywhere in the world, addresses such inevitable high-exposure episodes, and that this gap in data and risk assessments renders current regulatory appraisals largely irrelevant to the small percent of applicators -- but still a lot of people -- who experience these unusual, high-end exposures. At a minimum, please consider pointing out that no regulatory authority in the world has declared such exposures safe.
Minor Comments

Intro, line 13 -- suggest spell out GBH (glyphosate-based herbicide)

Lines 39-42 -- urge you to add vast difference in genotox assessment (IARC "strong evidence" two mechanisms; EPA/EFA "no convincing evidence of significant risk..."). I believe strongly the difference in the genotox evaluation of GBHs is the MAJOR driver of the difference in EPA's and IRAC's final judgement (Disclosure -- I am writing a paper right now making this case).

Methods, line 42 -- suggest add (ppb) after first use of ug/l.

Discussion, 2nd full para from end, line 8 -- change to "...from 0.1 ppm in vegetables..."

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An exceptional article

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Since Oct 2017 I have served as an expert witness in litigation over GLY-non-Hodgkin lymphoma. This work has provided me access to sealed documents. In conducting this review, I have not relied on, nor mention any information in sealed documents. Otherwise, I declare I have no competing interest.

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