Reviewer’s report

Title: Trends in Neonicotinoid Pesticide Residues in Food and Water in the United States, 1999-2015

Version: 0 Date: 24 Oct 2018

Reviewer: Melissa Perry

Reviewer's report:

This is a well written and well cited manuscript that makes use of federal data sets to summarize current information on neonicotinoid detections in US food. The analyses are original and provide novel descriptive data that are not currently available elsewhere.

The manuscript can benefit from inclusion of prior reports from the Government Accounting Office that highlight the weakness in the current federal system for evaluating pesticide detections in food commodities (https://www.gao.gov/products/GAO-15-38). The limitations of the pesticide monitoring program can be acknowledged and referenced.

Other limitations of the current analysis that can be acknowledged is it is entirely descriptive. No statistical tests or modeling were conducted. The use of the term "trends" should be used with clarification throughout the manuscript because it otherwise implies a statistical trend when it is actually a descriptive trend. Abstract can be revised to clarify this. It could be stated the goal and original contribution of this study was to provide a descriptive compilation of these public domain data to date, in response to time sensitive data gaps on the presence of neonics in food.

While the ways in which neonics are applied is described in the intro, the Discussion section can discuss differences in detections by type of application per commodity. Corn and soybean seeds are typically coated with neonics at the time of planting for example, whereas other commodities are sprayed. What if anything is understood about these different routes of use by commodity, and does it have any impact on the likelihood of detection?

Also worth mentioning in the implications section of the Discussion is the potential human exposure from the residues isn't understood. There isn't a current biomonitoring system in place to determine whether these residues make it into the body because there are currently no validated biomarkers for detecting neonics in urine or blood.

(FYI - NHANES monitors >200 chemicals but neonics haven't been included yet - they should be forthcoming soon).
The table and figures need to include the LODs to be most informative. In the discussion of other food residue studies, comparisons between the LODs is needed otherwise the % positive detects are not directly comparable across studies.

The data on baby food should be included as main findings rather than supplemental because these findings are of particular interest given they may pose risk to the youngest members of the population.

The Figures are low on informational value, particularly in gray scale. For the domestic figure it may be more informative to include only compounds above 5% detection, which would simplify and hone the most noteworthy information. LODs and number of samples tested are needed in the Figure title or footnotes.

Data can be used as a plural noun throughout the manuscript.

Need to better explain how replacements are being interpreted. The writing in the manuscript implies that based on the observed trends that compounds other than imidicloprid are being used "as replacements". It would be informative to explain if there are any sales or marketing trends data available to confirm this observation or if this is only assumed based on changes in detections.

**Level of interest**

Please indicate how interesting you found the manuscript:

An article of importance in its field

**Quality of written English**

Please indicate the quality of language in the manuscript:

Acceptable

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