Reviewer’s report

Title: Potential effects of polychlorinated biphenyls (PCBs) and selected organochlorine pesticides (OCPs) on immune cells and blood biochemistry measures (NHANES 2003-2004)

Version: 3 Date: 28 September 2014

Reviewer: Christa Osuna

Reviewer’s report:

Major Compulsory Revisions

1) How correlated were each of the exposures with each other exposure? It was mentioned in the discussion that since the non-dioxin-like PCBs were more strongly associated with changes in CBC or blood chemistries, that the use of toxic equivalency factors may not be appropriate. However, exposures to non-dioxin-like and dioxin-like PCBs are often highly correlated and it is difficult to separate the effects of one from the other. In making this conclusion, it would be helpful to know how strongly correlated dioxin-like PCBs are with the non-dioxin-like PCBs in this population.

Minor Essential Revisions

2) How were the exposures that were evaluated in this study chosen? Were these all the chlorinated compounds that were available in NHANES, or are they a select subset?

3) What are the values provided in the parenthesis in the tables beneath the geometric mean? Range? 95% confidence interval? Please indicate in table footnote.

4) There is information missing on some of the labels in the tables. For example, in Table 3, abbreviations are indicated for alanine aminotransferase and aspartate aminotransferase as ALT and AST, respectively, however, the abbreviation GGT is missing for gamma glutamyl transferase. Additionally, for the cell number parameters (neutrophil number, lymphocyte number, etc), please indicate the units.

5) On page 7, there is a discussion about the relative levels of exposures between males and females. There does not seem to be a figure or table of this data. If this data is not provided, “data not shown” should be indicated.

6) Please list in the “Blood count and biochemistry data” subsection of the Methods section each of the parameters from the CBC and blood chemistry reports that were used as dependent variables in the analyses. Since the results tables only contain parameters that were significant, it would be helpful to know
all parameters that were evaluated to know which were not significant.

7) On page 8, beginning of last paragraph, it is noted that Tables 3 and 4 present “selected blood biochemistry data of statistically significant changes”. It is not clear from this wording if you are presenting all statistically significant parameters or a selection among the statistically significant parameters.

Discretionary Revisions

8) While the results for the “Total” PCB effect (sum NDL PCBs and sum DL PCBs) are presented in the main Tables, it is also mentioned in the text which individual PCBs appeared to have the greatest effects. Providing the estimates of the effects of the individual PCBs in a supplementary table would allow readers to evaluate the magnitude of the effect of individual PCBs.

9) Can you justify why exposures were split into quartiles rather than using them as continuous variables? Using the exposure as a continuous measure is more often used for this type exposure and should provide a more robust analysis compared to quartiles.

10) There are a number of medical conditions that affect the CBC and blood chemistry parameters that were evaluated this study. Information for many of these conditions are available in NHANES. It is mentioned in the discussion that these conditions were not taken into account for these analyses. Was this because this information was not available for all of the individuals that were included in the analysis? If this information was available but it was decided not to include, can you estimate, based on the frequency of individuals with these various conditions, the extent to which omitting this information from the analysis may affect the results?

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests