Reviewer's report

Title: Effects of Exposure to Polychlorinated Biphenyls (PCBs) and Chlorinated Pesticides on Serum Lipids in Residents of Anniston, Alabama

Version: 2
Date: 31 October 2013

Reviewer: Monica Lind

Reviewer's report:

Response to the revised manuscript Effects of Exposure to Polychlorinated Biphenyls (PCBs) and Chlorinated Pesticides on Serum Lipids in Residents of Anniston, Alabama

I appreciate the extensive revision of the manuscript and I agree that the section on multicollinearity may be kept as an appendix. The current version of the manuscript reads much easier while still providing additional details.

There are some minor essential issues remaining in order for the manuscript to read more clear:

1. For all tables, write explicitly which p-value threshold that was used for statistical significance, e.g. P-value for statistical significance was <0.05
2. In the previous version of the manuscript, the results in table 4 read slightly different in the result section than in the current version: the last section on tri-/tetra-ortho PCBs LDL cholesterol and Triglycerides are still statistically significant on p<0.05 level alongside total lipids and total cholesterol but this has been removed from updated version, for unclear reasons.
3. I strongly advise you to consider beginning the discussion with the main findings then followed by the paragraph that is now nr 3 (“The results reported here are consistent...”), as was done in the previous manuscript version (although avoiding a numbered list). After that you may discuss paragraphs 1 and 2. This would allow the reader to easier follow your thoughts.
4. Regarding the issue on lipid-adjustment or not, I do appreciate the addition to the discussion. However, the sentence “Our results are all based on wet weight measurements of levels of POPs, which is preferable to lipid adjusted levels [48], but still may lead to some level of error in lipid measurement [49],” in the discussion is still not clear. The first half seems to relate to why you did not want to lipid-adjust the exposures (POPs) when studying effects on lipid parameters, and the second half is unclear. Regarding the first half, Schisterman et al did a simulation study investigating POP, lipids and a health outcome, whereas here the lipids are the outcome in this study which makes is slightly different. Would you know of another reference supporting the use of wet weight POPs when investigating lipid levels?
   a. Regarding the second half: Do you mean that even though you prefer to use wet weight POPs, this may lead to errors in estimating the effect on the lipid
levels? I.e. that there might be misquantification of the wet weight POPs? Or incorrect estimation of the lipid parameters?

b. When using this short formula for estimating the total lipid levels from total cholesterol and triglycerides, how close to the true lipid value you will come using this estimation? Will you assume underestimation or overestimation of the true lipid levels? Are the populations where the formula was created similar to your study population? Do you think the gravimetric method is “gold standard” in estimating the total lipid contents in blood? Also, as stated by Bernert, “Regardless of the method used to calculate the total lipid concentrations from enzymatic lipid analyses, uncertainties will always result from the unavoidable assumptions that are made”. Relevant to bear in mind is that neither exposure nor outcomes might be completely correctly quantified, and if this may have any implication on the findings.

5. You state in the discussion that you “have adjusted results for the important confounders of age, sex, race, BMI, alcohol, smoking and exercise..” but you do not present univariate relationships for each confounder against the outcomes, or coefficients or p-values for any of the multivariate models. I would prefer that either you add some information on univariate analysis, or state (with references) that the confounders were chosen on biological grounds as they are known to be associated with both POP exposure and lipid levels.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

No COI