Reviewer's report

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

Version: 1  Date: 26 August 2013

Reviewer: Monica Lind

Reviewer's report:

Interesting study showing that PCBs and OC pesticide levels are related to lipid levels in a sample of high PCB exposure. This might be one reason for the previously reported associations between POPs and atherosclerosis and overt CVD.

However, that important message in the study is almost hidden in the massive amount of text and the massive amount of statistical tests that have been performed. This important paper has to focus in order to be readable! The entire manuscript needs to be re-written and then considered again for publication.

Suggestions:

1. Please specify a main aim/hypothesis. I would guess that the results presented in table 3 would be the primary aim.

2. Please delete all models 2 in the paper and the lengthy discussion on the issue of multicollinearity. As shown in the paper, you cannot trust the models 2 and there is no need to spend 10 pages or more of discussion on the statistical issues behind that problem. Also, the discussion has a more text-book like approach instead of research article approach. Maybe that could be a paper on its own in a more statistically oriented journal?

3. The text mass has to be significantly reduced. It is necessary to rewrite most of the statistical section also in the results section.

Other concerns:

4. You need to discuss more on the option that lipid concentrations do govern the levels of circulating POPs. Although the experimental data support a causal effect of POPs on lipids, the present cross-sectional study cannot rule out also partial reverse causality.

5. Traditionally, POP levels have been normalized for lipid levels. Please discuss more in detail how your data supports that approach or not.

6. Multiple testing. In one section you state that you have adjusted for 27 tests. I would guess that you have performed hundreds of tests altogether! If you specify which tests are within your primary aim and then adjust your p-value for those, the rest of the testing could be viewed as supplementary information. Even within your primary aim (which is not clearly specified now), several of the variables will be correlated, so a permutation test could correctly identify the critical p-value.
7. The references must be checked for accuracy and the citations should also be updated as there are newer papers that should be cited. Some papers are not correctly cited, one example is Lind 2012 which is not an animal study.

8. The entire discussion is immature and must be totally rewritten if published and the very last paragraph should be extended and updated as this is what the discussion should focus on. The discussion should be shortened from around 14 pages to maximum five, and focus on discus the findings and comparison with the relevant literature.

9. Based on the lack of structure of the manuscript, the poor English and unfocused discussion it does not seem that a senior researcher has been involved before submitting this manuscript. Please consult senior colleagues, e.g. the last author.

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

No conflicts of interest