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: 14 August 2013

Reviewer: mary turyk

Reviewer's report:

This is a well written and important manuscript.

- Major Compulsory Revisions

1. Participants taking lipid-lowering medications were eliminated from the analysis. However, other medications are known to affect lipid levels, including most protease inhibitors, diuretics, beta blockers, retinoic acid derivatives, estrogens, progestin, and glucocorticoids. Have the authors examined these medications as potential confounders or conducted a sensitivity analysis in which participants using these medications were excluded? I would expect at minimum to see a statement in the methods that other medications that are known to affect lipids were not associated with the POPs and so were not examined as potential confounders. It would also be useful to have the sensitivity analysis for the main findings for sum PCBs and sum POPs.

2. The variable used to adjust for smoking (>100 cigarettes over a lifetime) is inadequate. Is there a measure of current smoking available? I think this is a very important point as cigarette smoke exposure activates cytochrome P450s. If no other variable is available, please add some discussion of the limitations of the smoking variable.

- Discretionary Revisions

1. With respect to the subgroups of PCBs selected for statistical analysis, it could be illuminating, with respect to mechanism of action, to include some potentially functional groupings of PCBs (see Warner et al for a summary of classification schemes in the literature http://www.ncbi.nlm.nih.gov/pubmed/22119029).

2. More discussion of any biological significance related to the individual congener groupings that were tested and found to be associated with serum lipids (those with three or more ortho chlorines and/or those with eight or more total chlorines) would be helpful.

3. The discussion of multicolinearity is very well written and extensive. However, the length of this section is distracting and perhaps belongs in a separate paper. This section could be shortened and the authors could consider excluding the discussion of Simpson’s Paradox.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests