Reviewer's report

Title: Indoor Air Pollution Exposure from Use of Indoor Stoves and Fireplaces in Association with Breast Cancer: A Case-Control Study

Version: 3  Date: 7 November 2014

Reviewer: Jennifer Peel

Reviewer's report:

I thank the authors for their responsive revisions to the reviews. The manuscript is much improved, but I have just a few remaining questions.

Major Compulsory Revisions

1. Although I think PAHs are most certainly a strong possible driver of the observed association, and should be discussed as such in the manuscript (e.g., in the Discussion), the fact remains that the authors did not assess PAHs in this study. Additionally - there are likely other chemicals in the emissions that could plausibly be carcinogenic. I continue to think that the focus on PAHs should be reduced. For example - in the Abstract: "However, the association between PAHs from indoor stove/fireplace use and breast cancer risk is unknown." This statement is misleading and misplaced because this is not the association being evaluated in this study. At the very least the authors should provide further justification of the focus on PAHs; there is much information provided about PAHs, but little regarding the other chemicals in emissions (particularly in synthetic logs during the relevant time period for this study) (e.g., evidence that these other chemicals are not likely to cause cancer).

2. I thank the authors for adding Table 1. It seems unnecessarily busy. I think 2 tables (one by case control status and one by exposure status) would be clearer to the reader. There are some important differences between cases and controls that are difficult to discern in this format.

3. I am concerned about a potential source of misclassification of the exposure, but I'm not sure that I understand the study clearly. It appears to me that (in the main analysis) if a woman lived outside of Long Island and used a fireplace that exposure is not captured in any of the measures that were examined in this manuscript. If that is correct, it seems like we would like to know if cases and controls differed with respect to their length of residence on Long Island in order to know if this misclassification is potentially differential (and therefore could lead to a bias away from the null).

4. With regard to possible selection bias – participation/response rates often vary by socioeconomic status, as does fireplace use.

5. Residual confounding can also be present when measured confounders are not measured well (e.g., alcohol intake or physical activity). I suggest adding a
statement to acknowledge the possibility.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.