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: 2
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Reviewer: LInda Birnbaum

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This is a clearly written study demonstrating that indoor burning of synthetic logs is associated with an increased risk of breast cancer in the Long Island Breast Cancer Study. The results do suggest that synthetic logs, which generate more PAHs than wood, is problematic. Their data suggest that more years of using such logs increases the risk, and that being an adult is more problematic than exposure before the age of 20. I find this quite problematic. When did synthetic logs come into common use? Certainly, not 40-50 or more years ago. The number of women who used synthetic logs before the age of 20 are very small in this study and I do not know if the study has the power to address this. I think that the suggested increase in risk prior to age 20 for any stove/fireplace is important - and likely just misses significance because of small numbers.

The exposure indice is quite crude - did you use a fireplace 3 times per year or more in a given year? I wonder how accurate that measure of exposure really is.

While this population is largely white, is there a large number who are Ashkenazi Jews, who have a relatively high incidence of BRCA1 and 2 mutations... Was this examined?

There are several studies which demonstrate that there are critical windows of susceptibility for breast cancer. The work of Barbra Cohn, for example, has shown that the relationship between DDT and breast cancer involves exposure before the age of 14, and is strongest before the age of 4! While PAHs are genotoxic carcinogens, they may additional windows as well - childhood, puberty, pregnancy. In fact, was pregnancy when using stoves examined?

PAHs can be estrogenic - or anti-estrogenic, as well as modulate multiple other nuclear receptor systems.

Ref. #11 - is NOT from a NCI group, but from scientists from several organizations who participated in a meeting on indoor cookstoves and reviewed the data on exposure to such and cancer. (2nd paragraph, p.13)

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:

I declare that I have no competing interests