**Reviewer's report**

**Title:** Vegetation fire smoke, indigenous status and cardio respiratory hospital admissions in Darwin, Australia, 1996-2005.

**Version:** 3 **Date:** 22 February 2008

**Reviewer:** Zorana Jovanovic Andersen

**Reviewer's report:**

Review of a Paper â##Vegetation fire smoke, indigenous status and cardio-respiratory hospital admissions in Darwin, Australia, 1996-2005â##

This paper addresses very relevant issue in air pollution epidemiology on which evidence is still very limited - the health effect of air pollution originating from biomass or vegetation fire smoke. Unique geographical placement of city of Darwin, where major air pollution contribution (over 90%) comes from vegetation fire smoke, makes this site interesting and relevant to study, where most of the current knowledge on air pollution effects comes from larger cities with mixed and complex air pollution contribution form various sources, usually, predominantly traffic. Furthermore, the study addresses another relevant issue, effect modification of air pollution effects by social class, with data on socio-economically disadvantaged indigenous Australians. Thus, the research question posed by the authors is new and well defined. The methods were appropriate and well described, statistics were adequately assessed and described, and sufficient details were provided to replicate the work. The manuscript generally adheres to the relevant standards for reporting and data deposition. The discussion and conclusions well balanced and adequately supported by the data. The title and abstract accurately convey what has been found. The writing is acceptable, but language could be more concise and polished, use of punctuation better. I suggest some further editing of this article.

However, this article suffers from several important limitations. The study has limited power due to the low number of hospital admissions in a small town of 100,000 inhabitants such as Darwin. The authors do however counterbalance this limitation (which they self acknowledge) well in their study design by sufficiently long, 10 year (season) study period. Another limitation pertains to air pollution assessment, where PM10 measurements are only partially available, and the rest of the daily concentrations of PM10 were estimated by predictive models. This is limitation as the use of predictive air pollutants concentrations introduces more uncertainty into the health effects estimates than measured concentrations. Furthermore, authors do not model PM10 concentrations during the wet seasons (December-March), thus providing health effect estimates only for 8-month dry seasons. Clearly, full time-series of daily measurements of PM10 for all 10 years would be preferable in this study, with a possibility to study effect of season on air pollution effect on health (possibly interesting interaction

between air pollution and dry and wet season, with respect to humidity, which in itself has effect on respiratory health points).

Finally, despite mentioned limitations, I recommend this article for acceptance, after discretionary revisions (needs some language corrections before being published). My judgement is that this article findings are important to those with closely related research interests, namely in air pollution epidemiology related to health effects of biomass related pollution. The unique settings of Darwin with almost exclusive air pollution contribution from forest fires, well defined health outcomes, and good design and sound statistical modelling, merit this studyâ##s acceptance.

- Major Compulsory Revisions

1. State clearly in exposure measures where was the primary monitor located (in the centre of the city? Height? Relation to other pollution sources (traffic etc.)? is this a background monitor?) .

2. Consider leaving out Table 2 and describing the variable definition in the text instead (this depends on the Journal requirements on the number of Tables and Figures allowed).

3. Not appropriate to discuss the paper which is not in press yet â## Morganâ##s article from Sydney which is listed as â##submitted for publicationâ##.

- Minor Essential Revisions

Sloppy and inconsistent use of punctuation! Specific suggestions below, but suggest editing article for this carefully.

Abstract

4. Results, last sentence use comma instead of semi colon.

5. Conclusions, first sentence, erase â##disproportionately,â## and use â##strongerâ## instead of â##higherâ##. Second sentence, use period instead of semicolon.

Background

6. page 5, last sentence in paragraph 1, displaced period after â##2000â##, shouldnâ##t be any.

7. page 6, last sentence, last line, erase semicolon after â##recordsâ##

Methods

8. Outcome measures, page 7, last sentence: use commas instead of semicolons.

9. Exposure measures, page 7, second paragraph, second sentence, erase semicolon after â##firesâ##.

Statistical modeling

10. page 9, second sentence, erase period after (MCAMPS) and (NMMAPS).

11. page 9, third sentence, erase semicolon after â##studiesâ##

Results

12. Second sentence, use comma instead of semicolon.

Discussion

13. page 13, third sentence, erase semicolon after â##chanceâ##

14. page 16, paragraph 2, first sentence, use commas instead of semicolons

15. page 16, paragraph 2, last sentence, use comma after â##Additionallyâ## and erase semicolon after humidity.

**What next?:** Accept after minor essential revisions

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

**Quality of written English:** Needs some language corrections before being published

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