Reviewer's report

Title: Impact of air pollution on pulmonary function and respiratory symptoms in children during different seasons of the year. A cohort study.

Version: 4 Date: 23 June 2010

Reviewer: Robert Chapman

Reviewer's report:

The manuscript is improved, but it still overinterprets the effect of air pollution on study findings, especially in the discussion. I still see little or no consistent effect of air pollution levels on symptom rates or lung function. The discussion should be further revised to reflect this. If this is done, and if the authors respond to the comments below, I think that the manuscript will be suitable for publication.

In the methods section, the subsection on statistical analysis still does not tell what statistical technique was used to evaluate the symptom data. The abstract mentions multilevel logistic models. Specifically, how were these models constructed? Were separate models constructed for the different seasons?

In table 4, it appears the the effect measure given is the modeled coefficient (the modeled log odds). However, I am not sure of this. Generally, odds ratios, not betas, are given in this situation. Was school included in every single-pollutant model? Units should be given.

In table 5, units should be given.

Again, why are confidence intervals given in table 6, whereas p-values are given in the other tables?

The meaning of the variable for fossil fuel is still unclear, and I am not convinced that this variable helps the analysis.

I agree that pollutant levels were more often associated with "obstructive-type" than "restrictive-type" changes in lung function. However, there was a tendency for these levels to be negatively associated with FEV1, but positively associated with FEV1/FVC. Thus, the manuscript does not present convincing evidence of an association of air pollution levels with obstructive lung function changes, or, for that matter, with restrictive lung function changes.

The conclusions section erroneously states that PM10 levels were negatively associated with FEV1/FVC. Table 6 indicates that PM10 levels were almost always positively associated with FEV1/FVC.

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

Declaration of competing interests:

I declare that I have no competing interests.