Reviewer's report

Title: The association between low level exposures to ambient air pollution and term low birth weight: a retrospective cohort study

Version: 1 Date: 30 August 2005

Reviewer: Marina Lacasaña

Reviewer's report:

General
The authors conducted an interesting study to evaluate the association between low birth weight among infants of 37 weeks or more, according to gestational age and low levels of exposure to SO2, PM10 and O3. This research is relevant because of a growing concern about the possible health implications that air pollutants exposure at exposure concentrations that nowadays may have reached our streets and even our homes can have during pregnancy and early childhood. On the other hand, low birth weight is considered an important predictor of foetal, neonatal and infant mortality, as well as of infant and adult morbidity. Due to the fact that air pollution is a worldwide risk factor to which infants from all walks of life can be exposed to, these type of studies are of great relevance to Public Health.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
I have the following questions regarding the study methodology:

1. Low birth weight prevalence in the studied population is low compared to other populations, besides, the exposure levels to different air pollutants is also low. The lack of observation of association in the lower exposure quartiles could be due to lack of statistical power. Authors should make reference to the power of the study.

2. I consider that models should adjust according to origin (rural or urban areas) because of the difference in the environmental risk factors for low birth weight; for example: there is higher exposure to pesticides in rural areas. Besides, the assigning of exposure could not be performed for 48,222 births. Was there a difference in the percentage of births to which no exposure could be assigned between rural and urban zones?

3. Was the colinearity that exists between births of the same mother, taken into account for the analysis?

4. I consider that the models should have adjusted also for levels of other atmospheric pollutants.

5. Although the Authors mention that one of the strengths of their study is the information regarding tobacco intake. The available information refers to the mothers smoking habits at the term of the pregnancy, and, as we know, many women stop smoking after they find out they are pregnant which usually happens after the first month of conception, this means, in the first trimester of pregnancy; and it is during this particular stage of their condition when the risk for low birth weight is higher according to this study.

6. Finally, it is important to point out that these type of studies with geographical assignation of the exposure, always seem to have a non differential classification sesgo of the exposure, which tends
to underestimate the magnitude of the association.

7.- The results of different studies about prenatal exposure to environmental air pollution and low birth weight, show no consistency as to which pregnancy trimester could be most relevant and the specific pollutant which may represent a higher risk (You can read: "A Meta-analysis", published in the European Journal of Epidemiology, 2005; 20:183-199). Therefore, it is necessary to conduct follow-up studies to evaluate personal exposure using personal monitoring of different air pollutants or identifying different biomarkers of exposure, allowing the adequate evaluation of the impact of each pollutant on reproductive health at different stages of pregnancy, and, providing hypotheses of their possible action mechanisms.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

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Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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.