Reviewer's report

Title: Effects of air pollution on neonatal prematurity in Guangzhou of China, a time-series study

Version: 1 Date: 14 June 2010

Reviewer: Shiliang Dr Liu

Reviewer's report:

This is an interesting manuscript on a topic of importance in the air pollution literature. The authors did a nice job of collecting and analyzing the data for a huge city, a typical developing area with considerable air pollution in China. The analysis carries a great value of significance and representativeness (of newly industrial area) in the assessment of air pollution and early childhood development. The main strength is its consideration of cumulative effects or adjustment for co-linearity of multiple pollutants. My comments are briefly given below.

# Major compulsory revisions

o The authors should give more description of their birth data. As described, the data was collected for a city, Guangzhou. Does it mean the metropolitan areas including the outskirts or surrounding counties? The basic statistics should cover the total population, live births and stillbirths, as well as brief information about the area. How complete and consistent of the birth registration and information recording/taking across the numerous (and several types of) birth hospitals within the city, and how many births occurred in hospitals and homes? Missing values of those variables in the birth certificate registration, particularly gestational age, birth weight, and how did they define “prematurity”, use <37 weeks of complete weeks gestation and/or anything else? Please state these in a little more detail and clear in the Methods section. In addition, population migration or even daily change in births may be mentioned.

o In general, intrauterine growth retardation (IUGR) is considered a better measurement in assessing fetal health or adverse development status, including prematurity. Since data on birth weight is available, if complete, I would suggest adding the analysis of association between IUGR and air pollution.

# Minor essential revisions:

o IUGR is important, but is limiting, since it is a dichotomous outcome like preterm birth (i.e, <37 complete weeks of gestational age). The authors may look at gestation as a continuous variable as well in the analysis. Looking at gestation age (reduction) will provide additional information on effects of air pollution, though the authors could argue whether this is necessary.

o In the Methods section, the authors commented excessively on the statistical analysis (i.e. time series GAM), especially about its statistical modeling. I would
suggest that one describe the method briefly, but give comment on its application to this analysis in its Discussion section. In other word, remove the last second paragraph (ie., Principal Component ……) in the Methods section.

o Although the time series modelling is not new, its hypothesis and usefulness of this statistical analysis of association between prematurity or fetal development and air pollution would be of help if they could be stated clearly in the text.

o Suggest adding a graph or table showing the variations/fluctuations in preterm births and IUGR over the time.

# Discretionary revisions

o A brief description of air pollution exposure data may be necessary. For example, the authors can specify for the daily max whether they averaged all the hourly values and then took the max of these hourly values or they averaged all the daily values and took the max.

o How many monitoring stations were involved to collect the air pollution data citywide? How measures from several stations within the city were calculated to the values presented in Table 1?

o Obviously, English is the authors’ second language. The authors should first check their expressions, wording and spelling more carefully before they submit their revision.

**Level of interest:** An article of outstanding merit and interest in its field

**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.