Reviewer's report

Title: Components of fine particulate matter and daily mortality in the Denver Aerosol Sources and Health (DASH) study

Version: 1 Date: 11 February 2015

Reviewer: Xavier Basagana

Reviewer's report:

This paper analyzes the relationship between PM2.5, EC, OC, sulfate and nitrate and mortality in Denver. Exposure data comes from a single station representative of population exposure, and daily data is available for 5 years. The median daily mortality counts are 33. Increased risks are found for total mortality and cancer mortality, but not for cardiovascular and respiratory mortality. The paper is clearly written and the statistical methods are appropriate.

Major comments

1) Some relevant recent publications are missing. For example, Dai et al. EHP 2014 122:837–842 report associations for 75 US cities, and they do find associations for cardiovascular mortality. The following ones contain reviews of the evidence of PM components and can provide useful information for the Introduction and Discussion:

2) Introduction. The effect of not having daily data on associations has been investigated in Samoli et al: Air Qual Atmos Health 2014; 7:415-20

3) It would be interesting to carry out the analysis for “non-cancer mortality”, to see whether the effects for total mortality are basically driven by cancer mortality.

4) The study is relatively small, so the question on power could be addressed. For example, what is the size of the association detected in bigger studies? For example, are the point estimates for EC and CV and respiratory admissions of similar size to the ones found in other studies? If so the lack of association may be due to lack of power.

Minor comments

5) Page 10, third sentence. Better to specify “RRs FOR IHD were higher than…”

6) Page 10. Sentence on two-pollutant models. Clarify what is meant by “with some sentitivity between EC and OC”.

7) Figure 2. It seems that the smoothed line in the plots should better capture the winter peaks. Do alternative methods of smoothing provide a better view of the
seasonality?

8) Figures 3 and 4. It would be useful to add horizontal lines at RR=1. Actually, some plots have it (e.g. Fig 3: Total mortality – Nitrate) and most of the others not.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I have no competing interests.