Reviewer’s report

Title: Desert dust outbreaks and respiratory morbidity in Athens, Greece.

Version: 1 Date: 18 May 2017

Reviewer: Stefanie Sarnat

Reviewer's report:

The authors are to be commended on their thorough and responsive revision. I have only a few follow-up points:

1. In the previous version, I didn't fully appreciate that data were only available for specific dust and non-dust days. This has been clarified well in the revision. As a minor point, I would refrain from labeling this as a 'time-series' analysis (line 94) given the discontinuous data available for this study (only 300 days over 6 years).

2. In my previous review (major comment #4), I questioned the very high magnitude of effects observed for dust days (~50% increased risk on dust vs. non-dust days). In response, the authors have added some text on data limitations that don't allow exploration of potential additional confounders (e.g., pollen levels). I would also suggest, however, that the authors highlight these magnitudes as being exceptionally large in the discussion - they are much larger than observed in previous studies. And, given that they are consistently large across all tested strata (e.g., in Table 3 for male and female, above/below 65 yrs, different outcomes), with no considerable variation, this suggests to me the possibility of a chance finding or uncontrolled confounding.

3. With the clarification of data availability in the revised text, I also wonder about the analytic design that the authors employed. The current Poisson models, controlling for temporal factors in the model, do not take advantage of the sampling design of case and matched control days. As a sensitivity analysis, can the authors run models in which an indicator variable is included for every matched strata (e.g., 132 indicators), rather than controlling for the matching factors of time, temperature, and humidity in the model? This second model would take advantage of the matched design, and thus would not need to include temperature, humidity, day of week, etc. (though might still include control for calendar month and holidays).

4. Finally, the health data were only collected for adults (line 74) - please clarify the lower age limit in the methods section, and also in tables that specify '<65 yrs', perhaps these labels can be revised to indicate the age range (e.g., 18-64 yrs?).
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