Reviewer's report

Title: Prediction and analysis of near-road concentrations using a reduced-form emission/dispersion model

Version: 1 Date: 19 February 2010

Reviewer: Rich Cook

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This paper will be of significant interest to scientists doing research on exposures to air pollutants near roads. In particular, this research will help modelers identify those variables likely to have the largest impact on results, enabling them to better focus data gathering efforts. Second, results from application of the modeling approach can clarify locations and conditions where emissions are likely to have the greatest impact, which can inform design of monitoring studies.

However, a number of discretionary revisions may improve the overall clarity of the paper. These potential revisions are as follows:

1) In the introduction, clarify the scope of this reduced model – it is designed for microscale analyses and is limited to several pollutants. It appears that the emissions submodel includes VOC, CO, NOx and PM, but this is not explicitly stated in the text.

2) Better articulate the need for a reduced form model in the introduction. Describe the types of assessments where it is most applicable, what the current data collection and processing challenges are, and how this reduced form model addresses those challenges.

3) In the first sentence of the results section, revise to read, “Results from previous sensitivity analyses have shown that MOBILE6.2 emissions are most sensitive to several inputs.”

4) Include as a reference on MOBILE6.2 sensitivity analyses the following paper:


Another paper which could be a useful reference is:

5) Sensitivity analyses in the past have shown that fuel RVP is an important parameter. Why was this not included in the emissions submodel? Also, it would be helpful to explain that were other pollutants included, other fuel parameters would have been important to include (e.g. fuel benzene for benzene emissions).

6) In the discussion of limitations, address implication of the recently released MOVES emissions model.

**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.