Reviewer’s report

Title: Impacts of highway traffic exhaust in alpine valleys on the respiratory health in adults: a cross-sectional study

Version: 1 Date: 24 September 2010

Reviewer: Claudia Elisabeth E Kuehni

Reviewer’s report:

The authors conducted an interview-based cross-sectional study to investigate if residence near Swiss Alpine highways is associated with respiratory symptoms in 15-70 year old adults. 3’287 inhabitants were selected from 10 trans-alpine rural communities and phoned for interviews. It was hypothesized that the harming effect of traffic exhausts is more accentuated by focusing on rural communities because background air pollution is less likely to dilute an effect as could be the case in an urban setting. 1’839 (56%) of the contacted persons completed the interview which asked about respiratory symptoms, risk factors/potential confounding variables and residential address. Results showed that participants who lived within 200m of a highway were more likely to suffer from wheezing without cold and chronic cough than participants living farther away.

A particular strength of the present study are the two approaches for traffic exposure, with a dichotomous variable (place of residence <200m away from highway vs. #200m) and a continuous variable using a bell-shaped function of the distance between place of residence and highway, respectively. The authors convincingly argue that a distance-based approach to approximate traffic-related pollution might be more precise in a rural compared to an urban setting with high levels of background pollution. Overall, this clearly written paper is a welcome contribution to the existing literature and no major revisions are needed. Minor revisions are detailed below:

Minor Essential Revisions

1. P 4, line 6-8: Please give some references, that distance-based pollution estimates are working well in rural settings. Are there any validation studies which can be cited?

2. P 5, Study population: Could you explain in more detail how the 10 communities were selected? As it is written now, one might think that the 10 selected communities were the ones that agreed to provide addresses of all residents.

3. Were the study participants aware of the main aims and hypotheses of the study? This might be relevant as outcomes were self-reported and might therefore be biased.

4. Page 5, Study population: Were the telephone numbers provided by the
communities or were they extracted from phone books? In the latter case, the study population would consist only of participants with a phone book entry.

5. Could the questionnaire used during telephone interviews be included in the online appendix?

4.6. P 7, second paragraph: It would be helpful to describe in more detail how the parameters for the bell-shaped function were estimated. Currently, it is difficult for the average reader to really understand how it was done.

7. P 8, line 7: Please explain the definition of “low education”. This potential confounder seems important because low education might be associated with proximity of residence to highways and with respiratory symptoms.

8. Please explain more explicitly why subjects were divided into the subgroups “with and without allergic rhinitis”, and why this might be relevant for the results.

9. P 8, line 16: As said before, the bell-shaped curve which is pointed out as a major strength of the study should be explained in more detail and supported, if possible, by references (1). If space is a problem, then in the online document.

10. Table 1: Please always add the actual number of persons (n) in addition to the percentages.

11. It would be interesting to see the results stratified by distance to major roads (as cited on page, 10 lines 1 to 5. Could they be included in the online document?

12. Please discuss in some more detail shortly why persons with nasal allergies might be more vulnerable to road traffic pollution.

13. P 14, line 8: delete “on the”

14. The limitations of the study are totally discussed away. Just list them, together with the strengths, so that the reader can make his own opinion.

**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