

## Reviewer's report

**Title:** PM2.5 metal exposures and night heart rate variability: A panel study of welders

**Version:** 1 **Date:** 4 February 2008

**Reviewer:** chris carlsten

### Reviewer's report:

NOTE: I have requested that biostatistics be evaluated by someone with more expertise in these models (particularly residual model). I have made a few comments that touch on biostatistical issues, but defer the thrust of that review to an expert. Otherwise, the following comments are made respectfully to this excellent research group.

--Major Compulsory Revisions

1. p5 - methods  $\hat{\#}$  subjects  $\hat{\#}$  one subject seem to have contributed 3x to data (and another 2x), disproportionate to other subjects. Though his/her exposure was presumably different on each occasion, it seems that his genetics/other individual characteristics are now disproportionately presented in the resultant data. Seems that he/she should only contribute once to data.

2. Seems that the  $\hat{\#}$ night susceptibility $\hat{\#}$  concept should be better justified. Seems that main basis for it is one study via same research group and same cohort. (or at least, why not look also at daytime HRV to validate this concept?)

3. first paragraph results:  $\hat{\#}$ night rMSSD was

lower on workdays as compared to non-workdays, although the difference was not

statistically significant $\hat{\#}$  -- can $\hat{\#}$ t say  $\hat{\#}$ lower $\hat{\#}$  and  $\hat{\#}$ not statistically significant $\hat{\#}$ . Really, there was just a trend which may be due to chance.

4. p7 bottom:  $\hat{\#}$ we adjusted all models for cigarette smoking by

including a dichotomous variable representing smoking status at the time of monitoring $\hat{\#}$   $\hat{\#}$  it is concerning that you cannot adjust for smoking more quantitatively; that  $\hat{\#}$ it is unlikely that the quantity of cigarettes

consumed differed between work and non-work periods $\hat{\#}$  does not seem nearly as intuitive as suggested, especially if there are weekday-weekend differences (not clear if non-workday monitoring was on weekends, but regardless assumption might be that smoking very different on days away from work vs days at work)

5. first paragraph discussion:  $\hat{\#}$ largest declines in HRV were observed per 1  $\hat{1}$ /<sub>4</sub>g/m<sup>3</sup> increase in vanadium, although the

confidence intervals were wide, as a number of the vanadium exposures were below the limit

of detection.â##â##same comment as #3 above (i.e. CI also consistent with increases in HRV)

6. first full para p. 12 â##Both the standard and residual models presented an inverse exposure-response relationship

for these metalsâ## â## does not seem correct for standard model given wide CIs.

7. does â##case crossoverâ## best describes study? The non-workday monitoring was under different circumstances that may affect results. Case-crossover would presumably imply crossover between welding/grinding exposure and non-exposure and other factors being equal, which is not the case here. This reflects somewhat incomplete description of overall design â## p5 methods, talks of â##non-workday monitoringâ##, and this might suggest monitoring for metals, but there is no apparent data on that (no table 2 equivalent for non-workday), so one presumes little metal exposure away from work (I suppose a reasonable presumption, but this should be more explicit).

--Minor Essential Revisions

1. no comma after â##twenty-sixâ## in abstract-methods.

--Discretionary Revisions

These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

1. abstract: â##research priorities have shifted towards identifying the responsible PM characteristicsâ## â## this seems a bit over-generalized.

2. top of p6 â## â##but

81% of the observations occurred within the same week.â## Not clear what the point of this is (is this â##goodâ##?). Don't see where the value of this is discussed later.

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.