Reviewer's report

Title: Dealing with uncertainties: The case of environmental burden of disease assessment

Version: 1 **Date:** 12 February 2009

Reviewer: Annette Pruss-Ustun

Reviewer's report:

General points

• Timely and relevant topic, which should be of interest to all those dealing with environmental burden of disease estimates. Interesting structure and approach.

Specific points

Minor essential revisions

• The argument made in the 2nd line of the introduction is misleading. Smith and co-workers estimate the GLOBAL impact on health of the environment , whereas Melse et al limit their estimates to the OECD. It is well-known that the impact of the environment in developing countries is much higher than in the OECD.

• Some issues made in Table 2 have little to do with uncertainty. Source one, "defining the environment", has to do with the clear explanation of scope and definition. So it is not a scenario uncertainty nor a value or methods unreliability. It would become an uncertainty only if the scope would not be explained or defined in the analysis.

• Table 2: I would propose deleting sources 1 and 2 and replace them by "health impacts which could not be quantified - either through incomplete exposure or exposure-response information. By the way, the line "context uncertainty" is misplaced in table 2 (should go UNDER column headings).

• Table 2: Not sure how source 6, "accounting for susceptibility of the individual" should be understood. Do you mean cases in which we have RRs which do not cover certain vulnerable groups, such as children, the elderly or immune-compromised individuals? Then you should rephrase it by "RR not studied/available/representative for certain population sub-groups".

• Furhtermore, ref 5 concluded (line 463) that currently global estimates can only be made for 3 environmental risk factors AT COUNTRY LEVEL (this must be specified, otherwise the statement is wrong).

Discretionary revisions

• Line 470: R. Lucas, author of the ref 32, has just published a global eBOD study for UV radiation. By the way, she does not use UV exposure duration.

• Line 458 etc: Ref 5 is not a very good example for input data uncertainty. At least for the great majority of countries with nationally representative data, it's about as good as input data get. For the remaining countries with modelled data,

that's indeed the case (and expert opinion does not come in here, other than in the model). By the way, the whole solid fuel use estimation is in detail outlined in another publication (Rehfuess E et al., about 2007 or 2008). As compared to national noise exposure data, for example, the mentioned survey data are much more reliable.

• The structure of uncertainties is nice, and the proposed solutions are interesting. It would however be nice to illustrate the proposed approach with a practical application to eBOD - should you have it.

• There are grading systems for the confidence in effectiveness of interventions, which cover various of the uncertainty parameters mentioned here, for example GRADE. Although not directly applicable here, it would have been relevant to discuss what are the limitations of existing systems of grading the evidence commonly used for evaluation of evidence.

• Table 2: Regarding source 4, "evidence is weak and contradicting", it might be useful to mention that in such cases one should consider not to perform an eBOD estimate.

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.