Reviewer's report

Title: Exposure to Benzene at Work and the Risk of Leukemia: A Systematic Review and Meta-analysis

Version: 1 Date: 22 August 2009

Reviewer: Bengt Jarvholm

Reviewer's report:

Major
1. The author say that there is a dose-response both for leukemia in general and AML. However, that is true for the point estimates, while the confidence intervals are overlapping and the differences in risks between dose intervals are rather small. I am not convinced that the data for e.g. AML significantly show a dose-response as presented here (the point estimates show it, but is it just a random finding?)

2. The diagnoses/classification of leukemias have changed over years. I miss a discussion if that could have had any influence of the findings.

3. The classification of exposure is very different in the studies and there may be differential and non-differential mis-classification. That is not at all discussed. Furthermore, there is also no discussion about possible other cancerous substances occuring the studied industries. I am not convinced about the quantitative estimates and they are not contrasted to previous estimations.

4. Schnatter’s reviewe included 22 studies, this fewer. What are the differences and how may that change the interpretation.

5. The overall point estimate does not exclude an increased risk for AML (or ANLL) but you conclude from the dose-respons that there is no risk. Such an analysis is strongly dependend on power and that the exposure classification is correct. I doubt that the exposure classification is of such standard, and I miss discussion about it.

6. I cannot follow the discussion about "healthy worker selection". I am not aware of which preemployment morbidity that increase the risk of leukemia and would influence employability!

Minor
1. The reference to Sorahan 2005 is missing in the reference list.

2. I would like to have the quility index in table 1. The authors state they have used it but the results are not presented anywhere.

Discretionana
1. It would be nice to show the difference in this review and the Schnatter review (which studies are included/not included).
2. I would like a reference to the statement that "the pattern differs from a typical publication bias, in which ... positive values."

3. I would like to have the number of cases in the different exposure groups (table 2). E.g how many cases is the point estimate for AML (high exposure) based on (I assume that it is quite few)

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

'I declare that I have no competing interests