Reviewer's report

Title: Auditory dysfunction associated with solvent exposure

Version: 1 Date: 23 October 2012

Reviewer: Ann-Christin Johnson

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Discretionary Revisions

1. This study is very interesting and it addresses an important area of hearing research. The knowledge in this field is generally limited and information about ototoxicity of chemical substances is still needed. The question raised by the authors about how to test solvent induced hearing loss is clearly relevant and the results of this study gives suggestions of relevant test procedures that could answer some of these questions.

2. The Title is relevant and the Abstract covers the content of the study.

3. The English language could be a little more scientific and needs to be looked into (e.g. a lot of also, also is found).

Major Compulsory Revisions (MCR) and Minor Essential Revisions(MER) (MER is stated below after each sentence/paragraph, else I mean MCR)

4. The Background and Introduction is very long. It gives a thorough review of the area, citing relevant literature, but with too many details. It could be shortened. In my opinion some of the references are better placed in the Discussion when the specific results are discussed.

The Methods are thoroughly described but in some instances it could be clarified; Subjects (page 6 and 7)

5. This part is not very clear (see questions below) and the order of the descriptions should be considered. MER

6. It is not clear how many subjects that were included from the start of the study, was it 100 + 100 before or after all the exclusions?

7. How was the educational background in the groups matched?

8. How many in the exposed group worked in the paint factories and how many in the laboratory?

9. The part on Exclusions from the different groups (p7 ff) is partly a result since it is based on the answers from the questionnaire and the actual figures about which and how many subjects that were excluded should be moved to the results section.

10. The number of subjects excluded and the reason could there be presented in a table.
11. In the Method section it should be stated the criteria for exclusion that was (hopefully) decided before the study started.

12. The definition of tympanometric results of Type A should be defined.

13. The definition of non-sensorineural hearing loss as an exclusion criteria should be given

14. The procedure of each of the audiological test methods are given later under Methods but I cannot find it a description of how the total procedure was performed.

14a. Were all tests in one subject done at the same time, in what order were the tests presented to the subjects etc?

14b. Was the questionnaire filled in by the project leader after interviews and was this done at the same time as the testing?

Exposure assessment

15. There are too much details about how the work in the paint factories and the laboratory was conducted. This part could be shortened and written more stringent.

16. However the part talking about the exposure assessment based on previous record should be more detailed.

16a. How many records?

16b. How and when was the sampling done?

16c. How was the means calculated?

Audiological assessment

This section is generally well described.

17. Regarding Random Gap detection (p 10) it should be described how the threshold was established, as the gaps in ms or what?

18. Regarding TEAOE (p12) it is said that the reproducibility was an out-come but the in the results only the binaural average of the amplitude is discussed. How these amplitudes were calculated (which frequency bands etc) could be given in the methods.

Descriptive statistics

19. The definition of hearing loss based on the audiograms needs to be clarified.

19a. What was the definition for high-frequency HL?

19b. What is the definition used for unilateral HL?

20. When defining the out-come measures from the different audiological tests (p12-13) the equations for each measure should be given in connection to each test.

20a. It is also hard to read maybe a small table would help for this? MER
Analytical statistics
21. Language in this section is not very good. MER

Results
Descriptive statistics
22. The results here should be coherent to the definitions of different kinds of HL from the PTA that has to be stated in the methods.
23. It is hard to read and understand the numbers in this part, a table giving the % of the different groups PTA might help?

The figures are good.
24. Figure legends for Figure 1 and 2 shall state that it is means for each separate frequency that is seen. MER
25. The figure legends or the figures could indicate which results that was significantly different between the groups?

Analytical statistics
26. Was a Chi2 test done regarding past Noise exposure also in the controls? MER
27. I cannot find that gender was associated with PTA in the multivariate model in Table 4? Is there something wrong with the table or with the text (p16)?
28. In the discussion (p17) it is said that past noise exposure was included in the multivariate model but this is not mentioned in the results (at least I cannot find it?)

Discussion
29. The limitations of the study regarding the design and the groups including the exclusions need to be addressed.

30. The results are discussed but I think more references is needed to support some of the hypotheses.
30a. This is particularly needed regarding; Other hearing out-comes (p19-20) and Effects on speech perceptions (p20-21)
31. Some literature references could also be moved from the Background sections MER

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:

I declare that I have no competing interests