Reviewer’s report

Title: Immune cell counts and risks of respiratory infections among infants exposed pre- and post-natally to organochlorine compounds: a prospective study

Version: 1 Date: 7 September 2008

Reviewer: Carsten Heilmann

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Basically, this interesting manuscript describes a study of the effect of PCBs and DDE on the immune function and on frequencies of respiratory infections in infants. The importance of the study is reinforced by the fact that the levels of the POPs examined are in the range of those commonly found in most western countries. The authors are, it seems, able to convincingly show that PCBs and DDE have effects on the immune system as well as on infection frequencies.

Many PCBs and DDE tend to covariate due to common exposure sources (although the BCB(28,52,101) do not) therefore, it is often difficult to discriminate between the effects of different PCB-types. Also, since PCBs in mother’s blood and milk correlate closely, it is difficult to separate the effect of prenatal and post natal PCB exposure. These strong correlations make it difficult to give to firm conclusions on which PCBs cause what effects on the immune system. Maybe this could be stressed a bit more in the manuscript.

More importantly, what I don’t like about this paper is the interpretations and conclusions proposed in the discussion.

From the results and the interpretations provided, it can be summarized that the most important effects of the different PCBs are:

1) PCBs type 28,52,101 exposure increase the likelihood of infection and increased WBC in infants.
2) Exposure to mono- and di ortho PCBs cause less infection and decrease CD8 positive T-cells concentrations.
3) Thus the PCB(28,52,101) are “immunosupressive” and
4) PCB mono and di ortho are “immunoactivating”.

The two last conclusions seem not very well founded. To suggest that a substance is “immunoactivating” and therefore causing less infection is highly controversial since an effective immune stimulatory substance has probably never been described. The finding of fewer symptoms of respiratory infection and a reduced number of CD8 positive T-cells is hardly suggestive of immune stimulation – I guess prednisolone in moderate doses could have the same effects. The finding by others that mono and/or di ortho PCBs may reduce antibody responses to diphtheria and tetanus toxoids after vaccination (18) points to an immunosuppressive effect of most PCBs.
Vice versa the finding of an increased number of WBC and frequency respiratory infection is not indicative of “immunosuppression” rather it suggests an augmenting effect of PCB(28,52,101) on the inflammatory response (which in itself is very interesting). The effect of DDE on the immune function is probably difficult to separate from the mono di ortho PCBs and the effect seems to be week.

Major Compulsory Revisions
The authors go a long way in order to discuss their - to some extent - conflicting findings. Although, I like most of the discussion the authors should not distance themselves so much from their results, if they reevaluated them according to the above.

**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.

**Declaration of competing interests:**
I declare that I have no competing interests.