Reviewer's report

Title: Water Disinfection By-products and the Risk of Specific Birth Defects: A Population-based Cross-Sectional Study in Taiwan

Version: 1 **Date:** 18 October 2007

Reviewer: Manolis Kogevinas

Reviewer's report:

General

The authors report of a large study in Taiwan associating 9 congenital malformations with levels of THMs in drinking water. The issue evaluated is important and has been discussed for quite some time. Exposure classification was based on routine measurements. An association is found between the highest exposure levels and specific malformations although no effect (actually a protective effect) was found for hypospadias. A metanalysis was conducted combining results from other similar studies. An important aspect of this study is the large sample size. Similar to many studies based on routinely collected data, this study has limited information on exposures and potential confounders. The authors could probably have provided a more balanced summary of the findings. Finally, the text could be clearer when discussing the metaanalysis.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The authors, mainly in the abstract, are reporting the most extreme results. It is true that they did have some significant increases in risk comparing the highest exposed group with the lowest for anencephalus, ventricular septal defects and cleft lip, but their is no dose response in the ORs by increasing THM level. The authors should be somehow more careful in interpreting these findings and should provide a . They should also comment more adequately the decreased risk for hypospadias.

The authors should discuss the range of exposures examined. The difference between exposure groups is rather narrow and, given exposure misclassification, it would be expected not to find large effects even if they existed. It would be useful if the authors provided more detailed information on the distribution of exposure levels in the highest category. In the discussion the authors could comment how do their exposure levels compare with those of other studies.

It is not clear what exactly have the authors done with the metaanalysis. This has to be written in a much clearer way. In some parts it appears as if they compared only with the Norwegian cohort while in the tables they quote other studies as well.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after minor essential revisions

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.