

Reviewer's report

Title: Missing mercury from mercury cell chlor-alkali plants may be found in food products: an environmental investigation of added sugar in foods

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Reviewer: Kathryn R Mahaffey

Reviewer's report:

This manuscript is based on the analyses for a very small number of samples (10) of high-fructose corn syrup (HFCS) for total mercury (i.e., not speciated). Speciation is important because of differences in toxicity for a specific exposure ($\mu\text{g}/\text{kgbw}/\text{day}$) between mercury and methylmercury. Because very little data are provided on consumption of HFCS, it is not possible to determine what contribution this source makes to overall exposures to inorganic mercury.

Within the USA and possibly North America overall, the number of mercury-process chlor alkali plants has diminished markedly. I think the current number for the US is three. Whether similar decrements have occurred in other continents would be useful to know. This becomes important because even if these data do uncover something important, the source is rapidly diminishing.

Specifics: The manuscript brings together a variety of sources of information, but does not integrate this information into a cohesive discussion. The manuscript appears to contain personal history (see first paragraph under Background) which may be important to the broad issue of science and public policy during the period 2000 through 2008 in the United States; however, it doesn't contribute to the data presented.

The analytical methods appear to be sound, but calculation of the quantities of mercury added at each analytical step would be useful in separating the analytical contribution to total mercury content.

An exposure analysis needs to include the distribution of inorganic mercury intakes from both this product and overall sources of inorganic mercury (e.g., diet, dental amalgams). The importance of the intake from HFCS can only be judged in an overall exposure context --- assuming there is a way to obtain enough samples to have confidence that the current distribution of data can be generalized.

The authors acknowledge that intake of mercury from HFCS cannot be calculated based on these data (see end of first paragraph on page 9). Because of a very small number of samples (10), little consumption data, and no effort to compare to quantities of inorganic mercury from other sources, it is impossible to judge the significance of this source to overall mercury exposure.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests