Reviewer’s report

Title: Inter-individual variations of human mercury exposure biomarkers

Version: 2 Date: 10 August 2005

Reviewer: THOMAS W CLARKSON

Reviewer’s report:

General
The authors are to be congratulated on the advance in methodology, specifically in adapting the Magos method the Merlin fluorescent detector and in the novel way of reducing the blank readings. Their findings are of considerable significance to the field of mercury toxicology. Although some of the findings are confirmatory, the conclusion that inorganic mercury is not appreciable accumulated in hair and is not correlated with dental amalgam is new and will act as a caution to those past efforts to use hair as a monitor of exposure to amalgam. Overall, the paper provides a timely clarification of the roles of hair, blood, and urine as indicator media for methyl and inorganic mercury.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
None

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
None

Discretionary Revisions (which the author can choose to ignore)

Page 4 line 2
The phrase “kinetics and toxicology” is somewhat redundant. The term “toxicology” includes the kinetics of the toxic agent.

Does reference (1) deal with inhaled mercury vapor?

Line 3
The kidney is also a target organ for inhaled mercury vapor.

Page 5 lines 4-6
Does reference (1) actually say that T-Hg in hair reflects inorganic mercury exposure in non-fish eaters? My impression is that reference (1) was concerned only with MeHg?

Last paragraph
Were the early experimental studies “often at high exposures”? My recollection is that they were often tracer studies or studies that did not exceed health guidelines?

Page 9 para 1
Please state the source of the radiolabeled MeHg
Table 2
The CV% for plasma appears to be the same as the CV% for whole blood and RBC despite the fact that the concentrations of Hg in plasma were an order of magnitude lower. Were larger volumes of plasma used for analysis?

Average values for the CV% are given covering wide ranges of Hg concentrations. For example the range in plasma goes from 0.05 to 1.3 ppb. Do you have data on how the CV% changes with Hg levels?

As I recall from reading textbooks on chemical analysis long ago, the variance in the samples reading depends upon how much it exceeds the blank reading.

You have not quoted the CV% for the organic component. Presumably these will be higher as they are the difference between total and inorganic readings?

Page 12, Table 4

Apparently multiple comparisons have been made in this table. Is it possible that some of the single *, low significance, high p value comparisons may be due to chance?

Page 14

It looks like the hair to blood ratios use different concentration units for hair and blood. The numbers might give the misleading impression that methyl mercury is not concentrated in hair. Why not calculate the ratio using the same concentration units for both media?

Page 17 para 1

The authors may be interested in a recent nationwide survey of mercury in hair in the USA where hair treatments had no effect on levels of mercury in hair.

What next?: Accept after discretionary revisions

Level of interest: An article of outstanding merit and interest in its field

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'