Reviewer’s report

Title: Lead, mercury and cadmium in umbilical cord blood and its association with maternal epidemiological variables and birth factors.

Version: 1 Date: 6 June 2013

Reviewer: Geoffrey M Calvert

Reviewer’s report:

This paper measured lead, mercury and cadmium in umbilical cord blood and investigated the association between cord blood metal concentrations with both parental variables and characteristics at birth. Lead, and cadmium were higher from mothers who smoked during pregnancy, and mercury was higher in mothers with greater fish intake. Cord blood cadmium concentrations over 0.29 µg/L were associated with lower 1-minute and 5-minute Apgar scores.

Major compulsory concerns:
1. Page 11: Authors reports that “no paternal factors were associated with cord blood metal measurements. However, the authors never report what paternal factors were assessed.
2. Page 12: The CDC level of concern is 5 ug/dL or 0.5 ug/L (not 5 ug/L). Authors need to confirm the units that were used in their analyses.
3. Page 15: The authors recommend that “mothers to quit smoking and reduce mercury intake by choosing low-mercury fish during pregnancy.” However, this is already the recommendation for pregnant women. This study doesn’t appear to provide any new novel findings.

Minor essential concerns:
1. Page 4, first paragraph: Additional effects to pregnant women can occur from lead exposure. These are reviewed in: http://www.cdc.gov/nceh/lead/publications/leadandpregnancy2010.pdf
2. Page 4, first paragraph: Need to define “MT expression”.
3. Page 4, 2nd paragraph: Other important lead sources are lead-based paint that may be peeling from walls, and lead-based gun ammunition (i.e. bullets).
4. Page 5: Need to better specify the “complications in logistic procedures in the remaining 5 cases”. Also, should “logistic” be “logistical”?
5. Page 6: Should “logistic reasons” be “logistical reasons.”
6. Page 8: Need to specify the number of reports with Cd levels were below the LOD.
7. Page 8 and 9: Change “study level” to “education level”.
9. Page 10: The mean weight needs units. Is it 3282 grams?
10. Page 14: It’s not clear what is meant by “there is only more study evaluating…”

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

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