Reviewer’s report

Title: Blood Manganese Concentrations in Jamaican Children with and without Autism Spectrum Disorders

Version: 1 Date: 4 May 2014

Reviewer: Pam Factor-Litvak

Reviewer’s report:

This paper assesses the associations between blood manganese and ASD using a case control design. The investigators are building on an emerging literature on the adverse associations between both deficiencies in manganese and excessive manganese exposure and adverse neurodevelopmental exposures. Although there are several studies which examine this research question in the literature, results are conflicting, perhaps due to lack of variability in the exposure distribution of cases and controls. The investigators therefore exploit the unique Mn exposure pathways in Jamaica using an ongoing case control study of the relationships between heavy metal exposure and ASDs. My major concern regarding this manuscript is the lack of focus. The investigators intensively investigate the sources of exposure to Mn, as they describe in detail the identification of confounders.

Major required revisions

1. Please either refocus the purposes of the paper to both identify the sources of Mn exposure and the associations between Mn exposure and ASDs, or focus on the latter with minimal discussion of the former.
2. Unfortunately ASDs were not further defined according to type. Please discuss.
3. Please provide details as to control selection. Were they chosen from the same geographic areas (it doesn’t seem so)? Please discuss any potential biases that the control selection may result in.
4. The statistical analysis section is confusing. Please be specific about which model was used for which analysis.
5. The statistical power analysis for predicting blood Mn concentration is not necessary.
6. It is unclear whether the associations between sources of Mn exposure and ASD are adjusted for variables such as social circumstances, which would be important. Please clarify and fix.
7. The conclusions in the abstract suggest that the investigators found associations between BMC and neurodevelopment in Jamaican children. They did not, and this is misleading. Please fix.

Minor required revisions

1. On the bottom of page 1 of the background the authors cite soil Mn
concentrations based on International Atomic Energy Agency levels. No reference is given. Please cite the actual reference.

Minor discretionay revisions

1. Please edit the paper. It is repetitious, especially when reviewing the sources of Mn exposure and the biomarkers of Mn exposure. The discussion of biomarkers can be dramatically shortened and placed in the discussion.

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

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I declare that I have no competing interests.