Reviewer’s report

Title: Parental preconception exposure to bisphenol A, phthalates and birth outcomes

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Reviewer: John Meeker

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This paper describes the results from an analysis of preconception biomarkers of exposure to BPA and phthalates among 233 men and women in relation to later birth parameters such as gestational age, birth weight, and others. It is a unique study design, and to my knowledge no other studies have conducted such an analysis of these chemicals to date. Given the need to consider preconception exposures in studies of pregnancy and birth outcomes the paper warrants publication after some clarifications and other revisions.

Major Comments:

1. One concern is the potential over-reporting/interpretation of the study’s findings in the abstract and results section. A lot of attention is spent on reporting the statistically significant quartiles individually but less attention on the overall trends, which gets confusing and is important for the reader to take away. The conclusion statements in the abstract, beginning of the discussion, and conclusion section about the observed associations may need to be tempered.

2. The paper would benefit from a more detailed discussion of the study’s limitations, such as sample size for assessing joint parent effects given the likely presence of substantial exposure misclassification, and the lack of accounting for in utero exposures.

3. What is the typical duration between sample collection and conception? This likely varies substantially between couples and should be reported and discussed.

4. Some discussion of the appearance of non-monotonic associations and whether they may be real should be included; it would also be interesting to see p-values for trend in the association tables.

5. The authors state that classification of exposure using one sample likely represents the correct classification for longer periods of time to support their use of a single sample; however, by this logic it would also mean that the (maternal – were maternal and paternal concentrations correlated?) results observed here may in fact be due to in utero exposures rather than pre-conception exposure.

Other Comments:

1. Title: probably more appropriate to describe as biomarkers of exposure rather than exposure
2. Abstract: first sentence of results clarify whether these are maternal levels.
4. Page 6, assessment of birth size: can remove that length in centimeters was converted to centimeters.
5. Page 7, missing covariates and exposure: Please provide more justification for this approach and that it improves the analysis or perhaps show a sensitivity analysis when instead excluding these individuals.
6. Page 7, “per quartile of nanogram per milliliter of urinary...” - as written no need for units to be included in that sentence.
7. Page 7, end of methods: it says models were also run with ln-transformed concentrations to test for linear trends – I do not see these results presented anywhere?
8. Results and Table 2: Is the difference in creatinine between males and females really that large? Differences in creatinine should also be explained/put into context with regards to differences in biomarker levels.
9. Table 2: Maternal mBP and miBP really identical or is this a typo?
10. Table 2: Unclear how mCHP, mOP, and mNP are assigned a geometric mean an order of magnitude below the LOD. It is also unclear how these chemicals with low detection rates were divided into quartiles; this needs to be explained.
11. Page 8, last paragraph: “findings were largely negative (Table 3)” – clarify what is meant by this statement.
12. Page 11, 2nd paragraph of discussion: would be more appropriate to compare with NHANES data from years that overlap with the years this study took place.
13. Page 13, 1st line: States that findings were significant at alpha=0.01, but p-values are not reported in the tables.

**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.

**Declaration of competing interests:**

I declare I have no competing interests.