Reviewer's report

Title: Vaginal douching and racial/ethnic disparities in phthalates exposures among reproductive-aged women: National Health and Nutrition Examination Survey 2001-2004

Version: 1 Date: 29 December 2014

Reviewer: Tamarra James-Todd

Reviewer's report:

Reviewer's comments:

This manuscript evaluates the association between feminine hygiene products and levels of mono-ethyl phthalate and mono-n-butyl phthalate in women of reproductive age to determine whether the use of certain products contributes to racial/ethnic differences that have previously been seen for certain phthalate metabolites. The manuscript is well-written and does a nice job of presenting the evidence for evaluating this novel question. The authors also conducted statistically sound methods to assess the question of whether the use of these products could explain racial/ethnic disparities. I believe this paper will be a great contribution to the literature, but I have several comments that could assist in improving manuscript.

Major compulsory revisions:

1. The authors mention several times that they will be discussing feminine hygiene products, but then focus exclusively on douching. Based on the title and the findings, this makes sense, but it is confusing throughout the paper, particularly because very little time is spent on other categories of feminine hygiene products despite the quite large point estimates. Could the authors provide more discussion on the other feminine hygiene products?

2. Regarding the non-significant findings for other feminine hygiene products, is it possible that the reason for the wide confidence intervals, despite the large point estimates (see Table 2), could be attributed to noise due to a larger variety of commercially available products in these different categories relative to those available and in use commercially for douching? If so, then the authors might want to mention this in greater detail in the limitations paragraph of the Discussion section.

3. Did the authors evaluate frequency of use for the other feminine hygiene products evaluated? If so, please report the findings out either in text in the Results section or in Table form.

Minor essential revisions:

Abstract:

1. Other types of feminine hygiene products are mentioned in the Methods
section, but in the Results section there is no mention of the findings for this. Please include a sentence about the main findings from the other products.

Introduction:
1. Why did the authors only evaluate women of reproductive age? Please consider adding in a sentence about this decision to clarify this for readers.

Methods:
1. On page 6, the paragraph starting with Study population, there is no need to repeat that MEP and MnBP are the metabolites of DEP and DnBP here. This was stated in the paragraph preceding this one.
2. The authors often go back and forth between present and past tense. Please be consistent and use past tense, since it is used throughout the majority of the manuscript.
   a. On page 6, the last sentence in the paragraph starting with Feminine hygiene product use should say “used” not “use”
   b. On page 8, the last paragraph, first sentence should say “mediated” not “mediates”
3. On page 7, in the first sentence of the paragraph starting with “Data on frequency of use…” the “of” should be removed in the phrase contained in the parentheses.

Discussion:
4. On page 11, the second sentence of the first paragraph should be in the Results section, as it speaks to the other feminine hygiene products, which should be discussed a bit more extensively.

Discretionary Revisions:
1. On page 12, the first paragraph last sentence, please remove “women” and simply state, “health care providers.”
2. On page 12, second paragraph, the sentence starting with “Moreover, cross-sectional studies in adult men…” should be deleted. This information is not essential for the argument presented in this manuscript.
3. On page 12, the sentence starting with “The disparity between these results…” needs to be re-worded for clarity.

Level of interest: An article of importance in its field

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.