Reviewer's report

Title: Affinity for risky behaviors following prenatal and early childhood exposure to tetrachloroethylene (PCE)-contaminated drinking water: a retrospective cohort study

Version: 1 Date: 7 June 2011

Reviewer: Christine Till

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This study investigates the long-term impact of prenatal and early childhood exposure to the solvent PCE on the affinity for self-reported engagement in three high-risk behaviors: cigarette smoking, alcohol consumption, or drug use as a teen or adult. Using the EPA’s water distribution system modeling software, estimates of PCE exposure from pipe linings in Cape Cod, Massachusetts were made. High exposure to PCE-contaminated drinking water during gestation and early childhood was associated with increased risk of drug use and certain smoking and drinking behaviors as a teenager or as an adult.

Overall, the rationale and purpose of the study are clear, the methods are appropriate and well described, and the interpretation of the results is carefully done, with covariates identified and well controlled. This well written paper is an important contribution to the field, particularly by examining relevant long-term behavioral outcomes in such a large, well-characterized sample with regard to exposure and demographic information. Finally, the discussion is thoughtful and limitations of the study are identified.

I recommend publishing the manuscript, and only have a few issues raised as discretionary revisions:

1. Can the authors explain whether the algorithm used to assess the leaching rate of PCE from the liner into the water would change as a function of time? If so, do the individuals who were born at a later date since the installation of the VL/AC pipes have a lower cumulative exposure compared with individuals who were born at an earlier date?

2. Can the authors comment on whether the individuals with higher estimates of PCE exposure were more likely to report a younger age of puberty onset, higher incidence of learning disabilities and/or mental illness? While these outcomes are not the focus of the current study, I raise this point because all of these outcomes could conceivably relate to the primary outcome of interest (i.e. risky behaviors) in this study.

Minor revision:
- p. 14, par. 1. “least” is written twice.
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.