Reviewer’s report

Title: Health Risks among Nonsmoking Residents Exposed to Benzene Following a Flaring Incident at the British Petroleum Plant in Texas City

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Reviewer: H Dean Hosgood

Reviewer’s report:

Mark A. D’Andrea et al provide an interesting paper that evaluates the health risks attributed to benzene exposure among non-smoking adults in Texas City following a flaring incident. This is an important topic in occupational epidemiology. The design of this molecular epidemiology study is strong, particularly the use of non-smoking adults, the random selection of unexposed subjects (30 to 50 miles from exposure site), and markers of impact on the subjects’ hematological profiles, and kidney and liver function. The overall design, methods, and interpretation of the study are good with potential limitations described; however the paper could be further strengthened if the following are considered:

1. As few high quality molecular epidemiological studies of occupational exposures exist, the authors should add an explanation in the abstract and introduction for why these particular biochemistries or hematological profiles were examined and how they bear effects on potential carcinogenesis.
2. The authors report that the exposed and unexposed groups are comparable in age. Where other demographic variables considered are potential confounders?
3. Tables 2-4 provide estimates of risk among exposed groups. These results, however, would be strengthened by adjusting for age, gender, and other relevant confounders.
4. The authors should provide support for the biological plausibility of their biochemical markers in relation to the health effects attributed to benzene exposure.

Minor Comments:

1. P-values should be provided in appropriate scientific notation (i.e., not P = 0.0000).

Level of interest: An exceptional article

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
None