Reviewer’s report

Title: Chronic respiratory disease among the elderly in South Africa: Any association with mine dumps?

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Reviewer: Bert Brunekreef

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This is a potentially interesting study but the statistical analysis is inadequate (improper adjustment for confounding, dependency of data within communities not accounted for). So the conclusions cannot be substantiated.

Confounding: all epidemiology textbooks tell you NOT to use statistical significance of confounder-outcome associations as a means to select confounders into the models. Confounders need to be specified in advance; then, unadjusted and adjusted associations need to be presented. And confounding is judged to be present if the effect estimate of the exposure of interest (in this case: living in a community near a mine dump) changes by some predefined %. Then possibly you may wish to find out which covariable was the most influential confounder, and you may want to discuss residual confounding by unmeasured or poorly measured confounders.

The analysis also needs to take into account that responses are likely to depend on the community to some extent. Some form of multilevel modeling is needed to obtain correct effect estimates, and unbiased confidence intervals.

The authors touch upon, but not really discuss the potential for response bias: if living in a community near mine dumps is a public concern in the exposed communities, inhabitants may be more likely to report and attribute diagnoses.

Level of interest: An article of importance in its field

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:

no conflict of interest