Reviewer's report

Title: Different radon thresholds and their associations with geographic risk characterization and lung cancer mortality trends in British Columbia, Canada

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Reviewer: Marit Skogstad

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Different radon thresholds and their associations with geographic risk characterization and lung cancer mortality trends in British Columbia, Canada

The present paper is an interesting and well written paper on different radon levels in British Columbia in Canada and lung cancer mortality.

Major comments
The title and background of the study does not give the reader an idea of the study design and the population that is studied. Number of inhabitants, confounders such as possible occupational exposure (mining, asbestos) are lacking here.

The recommendations of radon thresholds, risk maps, radon areas are thoroughly discussed in the background part of the paper and the reader is left wondering if there are studies in of occupational groups or from the general population that have dealt with cancer mortality among radon exposed individuals.

Also details on technical matters e.g. concentrations of measurements of radon takes much place (3 ½ page) in the methods part, whereas only little space is left for the outcome of interest namely cancer mortality. Here, number of participants and a characterization of them should be more detailed and they should be characterized according to potential confounders. Are there any missing data?

The discussion part starts with recommendations on radon concentration etc but should maybe start with the main results of the study.

In my opinion the most interesting results are summarized from line 332 until 340 and again from 346 to 350.

In the discussion part other studies of similar populations exposed to radon or even literature from occupational settings are missing.

Minor comments
The objective of the study should be at the end of “Background” part –before “Methods”.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests