Reviewer’s report

Title: The association between ambient fine particulate matter and incident adenocarcinoma subtype of lung cancer.

Version: 1 Date: 14 Apr 2017

Reviewer: Enrica migliore

Reviewer’s report:

I appreciated the Authors’ answers to my comments. I think that some of the presented results are interesting and deserve to be published.

However, the manuscript need some further revision.

1. p.4 rows 91-94 "Since prevalent…… using sensitivity analyses" : This sentence is more appropriately reported , thought similarly, in the "study covariates" section. Please, delete the repetition sentence from this section.

2 p.7 Smoking variable.

a. I've understand that you have performed different analyses to take in account both the possible confounding and modifier effect of the smoking variable. Some clarification are needed:

- In the multivariable model you have used as smoking variable the 'nested covariate' (defined by smoking status, duration of exposure and number of cigarettes per day). While, to test the modifier effect of smoking you had dichotomized the variable in quit in last 10 years or quit >10 years or never smokers. Can you explain why you have chosen a different cut-off to dichotomize the smoking variable than the one used for the nested variable?

- Moreover, you have also considered the effect in ever (?) and never smokers separately. Who are ever smokers? Are you referring to former smokers (without difference in time by cessation)? If yes, please change "ever" with "past" smokers, in the text, consistently with the table 1. Ever smokers also include current smokers, that are not represented in your population study.

b. p. 7 row 160. This sentence, on the effect found, should be moved in the results section.

3. p.8 Results section. It would be helpful if the authors could add, in Table 1,the p-values for any statistical test performed to compare the distribution of the variables in cases and controls. Please, add a column in the table.

4. p.9 row 195. Please delete "(Table 2, Model 1)", reported again at row 197.

5. p.9 rows 206-209: Please replace "ever" with "past" (see point 2)
6. Discussion.

a. p.12 In my opinion, the authors should not focus too much the attention on the sensitivity analysis performed, for the reasons discussed in the first revision of this paper. So, I suggest to remove the title "Exclusion of prevalent Non-melanoma skin cancer" (row 160). Also, from row 282 to row 293 (p. 13) the authors discuss in this subsection the effect of ozone, but this should be a general comment and not related to NMSC exclusion.

b. rows 265-266: Please delete the sentence "The rest of the studies… or not".

c. row 274: Please, use the acronym BCC, already defined, for basal-cell carcinoma

d. As already recommended, the authors should try to imagine a possible scenario to explain the result of this sensitivity analysis. Perhaps starting from a DAG, as suggested by the first reviewer, they should discuss the complicated relationship that seems to exist between NMSC, sun exposure, time spent outside, exposure to air pollutants and likely other uncontrolled factors (lifestyle, diet ...).

If authors think it is not necessary to use a DAG, I strongly recommend to add a sentence in the discussion trying to explain this relationship, as it is the innovative aspect of their work, as the authors have also pointed out in their conclusions.

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