Reviewer’s report

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

Version: 0 Date: 29 Nov 2016

Reviewer: Michelle Turner

Reviewer’s report:

This manuscript explores whether the association between ambient fine particulate matter air pollution (PM2.5) and lung cancer is modified by non-melanoma skin cancer status. The authors report that participants with non-melanoma skin cancer experienced a reduced risk for PM2.5 associated lung cancer and that participants without non-melanoma skin cancer an increased risk. Comments include:

* Abstract:
  o Would be nice to insert the years of the study period in the abstract
  o Since the O3 adjustment doesn’t make any difference in HRs consider presenting the single pollutant PM2.5 result in abstract
  o Could the p value for interaction be provided in the abstract

* Methods:
  o Could the time period of participant enrollment be provided?
  o Is there any information about the occupation of study participants? And possible occupational-level confounders? Is there any information on working outside?
  o Has an adjustment for ecological-level socio-demographic confounders been attempted?
  o Could more information about the non-melanoma skin cancer be provided? Is it self-reported? Physician-diagnosed? Is there information regarding the timing of diagnosis? What is the mean age at diagnosis?
  o Was an analysis with summer O3 attempted?
  o Did analysis examine potential non-linear effects of cigarette smoking on lung cancer risk?
* Results:
  o Is physical activity recreational or total physical activity (including occupational?)
  o Is hours per day spent outside leisure or occupational?
  o Is seems it would be useful to examine participant characteristics by hours per day spent outdoors and by non-melanoma skin cancer status
  o Table 2 insert single pollutant results for O3
  o Would be nice to see HRs for never smokers only overall and for analysis of interactions
  o Results are based on only 22 lung cancer cases with NMSC - the limited sample size should also be considered more explicitly
  o Is there any information on changes in lifestyle over time? Perhaps participants with NMSC changed drastically their lifestyle and were more willing to quit smoking after diagnosis leading to reduced cancer risk? Is there information on the timing of diagnosis in relation to quitting smoking?
  o Perhaps a DAG should be inserted for clarity?

* Discussion:
  o Could more discussion be inserted regarding the manuscript of Hart et al. 2015
  o There should be more discussion of O3 - findings here vs previous work and literature
  o Suggest shorten discussion beginning on line 262 and instead provide more discussion of how existing studies (mortality and incidence) have treated NMSC in analysis (included vs excluded). A systematic comparison would be nice.
  o Typo page 14 = quite smoking should be quit smoking
  o Could results throughout the manuscript be compared more with previous estimates based on non- or never smokers?

Level of interest
Please indicate how interesting you found the manuscript:

An article of limited interest

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Please indicate the quality of language in the manuscript:
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