

Interactive comment on “Method for determination of stable carbon isotope ratio of methylnitrophenols in atmospheric PM” by S. Moukhtar et al.

Anonymous Referee #1

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The authors present a unique method that features an HPLC sample preparation step for measuring the ^{13}C isotopic composition of methylnitrophenols (MNPs) found in atmospheric particulate matter. Results presented by Moukhtar et al. demonstrate the utility of stable isotopic data for studying the simulated formation pathways of particulate matter in the laboratory and understanding the particulates formation/origin in the atmosphere. Their approach may potentially allow for ^{13}C analysis of other semi-volatile components found in particulate matter.

The method presented appears to be scientifically sound, reliable, and accurate. However I have a significant problem with the overall writing, clarity, and organization of

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the manuscript. As a result, I found reviewing this manuscript very difficult. Because of these issues most of the important procedures, results, and significance were lost. The entire manuscript would benefit from significant revision and edits to improve overall clarity and organization.

A list of some examples is provided.

pg 3200 lines 13-15

"When GC/MS analysis showed high enough concentrations the remaining sample was derivatized with BSTFA and analyzed for stable isotope ratio using a Gas Chromatography/Isotope Ratio Mass Spectrometry (GC/IRMS)."

pg 3201 lines 6-9

"Especially the origin of the organic fraction of atmospheric PM particulate organic matter (POM), which contributes typically in the range of 30-50% to atmospheric PM, is only poorly understood."

pg 3201 lines 14-46

"One of the main sources of uncertainty is the extrapolation of laboratory experiments, which are typically conducted at high pollutant concentrations, to ambient conditions."

pg 3202 lines 17-19

"It is located away from industrial centres (London and Windsor, ON), about six km south of McDonald-Cartier Freeway, and seven km north of Lake Erie; surrounded mainly by agricultural fields and local roads."

pg 3203 lines 7-10

"Following sampling, filters were stored at 253K in glass jars. Prior to sampling, new filters were baked under synthetic air at...."

No significant problem here but maybe you should speak about this in sequential

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order. Prior to sampling you did X and after sampling you did Y.

Repeatedly, the use of the abbreviation "IS" for internal standard. This should be changed to "IntStd" or to anything else. The use of "IS" even when denoted in caps is very confusing because my mind reads it as the word "is".

page 3207 lines 7-9

"The recovery for each IS was consistently between 35 and 50% of whichever the mass spiked on the filter was (Table 2). Using the average recovery for these two IS, the target compound masses were calculated and compared to the spiked mass."

IS was? These two IS? Huh?

page 3212 lines 17-18

"The choice of IS depends on the absence of significant levels of the IS in the PM sample. This was verified by analysis of samples using different IS"

More examples can be provided but I think the problem is clear. I recommend that this manuscript be significantly revised and then reconsidered.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 3199, 2011.