

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

M. Keyword (Referee)

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This paper presents the development of a methodology to determine the concentration and stable carbon isotope composition of methylnitrophenols in ambient aerosols. While sufficient material was collected on ambient samples in the rural and urban locations for the measurement of methylnitrophenols concentrations, there was insufficient material for the determination of stable isotope composition in the rural samples. These methodologies will be very useful in developing understanding about the formation of secondary organic aerosol from the photooxidation of toluene, and as the method is

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applied to more urban samples and the database increases, will be important for understanding discrepancies between smog chamber studies and ambient atmosphere observations. Overall I found this paper pleasant to read and think this paper will be of interest to the readers of the journal.

The method development appears to be very rigorous with all quality control and assurance (QA/QC) steps well documented and well-thought out, particularly around recoveries in each stage of the sample processing. Discussion around the uncertainties introduced by loss of semi-volatile material during high volume sampling also indicates a sound understanding of the difficulties involved in collecting aerosol samples for the determination of organic composition. There are quite a few tables documenting the QA/QC so these could be rationalised to reduce the article size if required.

The manuscript could be improved by expanding in the introduction how this method development relates to existing methods, e.g. why this method is better, what deficiencies in existing methods does this method address?

Also at no stage is the term secondary organic aerosol (SOA) used in this paper. The authors may wish to incorporate this term, particularly to increase the likelihood of the work being referred to by the SOA research community (who will undoubtedly perform literature searches using this term).

The authors may also wish to address the specific comments below

Page 4 line 2 The interest in PM is not recent; perhaps change sentence to “PM receives much interest because of its significant impact on human health ...”

Page 4 line 11 Change compounds to VOCs

Page 5 line 2 “Phenols and related substances are of interest not only due to their toxicity, but also due to the fact that they can be formed in the atmosphere from VOCs in the gas phase” this sentence requires a reference

Page 5 line 17 replace heads with size-selective inlets

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Page 7 line 7 specify purity

Page 10 line 4 define V-PDB

Page 15 line 23 "The concentrations of PM with a diameter of less than $2.5\mu\text{m}$ generally ranges from several $\mu\text{g m}^{-3}$ in remote rural areas to $100\mu\text{g m}^{-3}$ or more for heavily polluted urban and industrialized locations. Consequently the mass of PM accumulated on the filter is in the range of several 10 mg and some 100 mg. The mass of methylnitrophenols in the samples is in the range of 10 ng to 500 ng, for truly remote regions most likely less". Is this in general or for the samples collected here? If in general then you should provide a reference.

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

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