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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatial variability of POPs in European background air" *by* A. K. Halse et al.

Anonymous Referee #2

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General comments In this study, authors collected air samples with PUF-passive air samplers from 86 European background sites. Various kinds of persistent organic pollutants (POPs) were analyzed and the spatial distributions of them were investigated. In addition, simulation results were also considered. The data presented in this study are quite valuable and this topic is highly relevant to Atmospheric Chemistry and Physics. However, this manuscript needs some revision before the publication. See below specific comments

Specific comments Page 22586 1. The length of Abstract is unnecessarily long. Lines 10-17 can be removed from the Abstract, because the introduction of passive air sampling and EMEP programs is well described in the main text. 2. I think the result for the co-deployed PAS samples is not the main result of this manuscript, thus I would delete

the relevant sentence.

Page 22590 1. For easier understanding, why don't you add a map of EMEP sites where PAS were co-deployed with AAS to the manuscript or the supporting information (SI)?

Page 22591 1. I wonder effective sampling volumes for each target chemical were calculated when the default sampling rate was used. 2. In this study, 8 performance reference compounds (PRCs) were used for the calculation of sampling rates. This means that 8 sampling rates could be calculated for one sample. However, there is one sampling rate for each sampling site in Table S1 in the SI. I wonder if averaged values of sampling rates were used. Please describe the method used in this study.

Page 22592 1. What is the definition of 'emission sensitivities (ES)'?

Page 22593 1. The half of the MDL from the field and method blanks was used to calculate air concentrations. It seems quite arbitrary to use the half values. They can be simply expressed as BDL (below detection limit).

Page 22594 1. There is no description how to estimate the uncertainty in the chemical analysis. How was the number of 35% calculated?

Page 22598 1. In section 4.2, a map for EMEP sites will be helpful.

Page 22599 1. The whole section 4.2.1 is about method validation. This section does not give any scientific information for monitoring data. It can be moved to the SI.

Page 22600 1. Passive air sampling using PUF-disk has been already confirmed to be a complementary technique to active air sampling. Considering this, the key objective of this study mentioned in section 4.2.2 is not proper. 2. Passive air samplers are known to collect gaseous compounds exclusively. However, there is no mention that the active air sampling data are for gaseous data or the total data (i.e., sum of gaseous and particulate concentrations).

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Page 22601 1. The frequency of active air sampling was not well described in this section, but it was listed in Table S5.

Page 22609 1. What is the main conclusion of this study? It would be better to add conclusion section.

Table 1: Use 'BDL' when the concentration is below method diction limits. Figure 4: Add units of X and Y axis. Figure 5: Explain the unit of ns/m3 (what is ns?).

Supporting Information Page 2: What is M.a.s.l? I guess it is above sea level (m) or a.s.l. (m). Page 4: Remove one blank between 3) and Adjusted. Page 7: The target ion of PAHs may be also [M]+. Page 9: Give an equation for the calculation of deviation between PAS and AAS. Remove a parenthesis for -77). Page 10: Remove 0, below the table. Page 11, Line 13: I could not calculate the spiked amount of PRC, because there is no concentration data for PRC. Line 27: ml -> mL (Check it throughout the whole text.) Page 12, Line 38-39: Sometimes, there is a blank between number and °C, and sometimes there is no blank. Line 54: μl -> μL (Check it throughout the whole text.) Give information about the amount of internal standards injected. Page 13, Line 77: 25m -> 25 m (Check it throughout the whole text.) Page 14, Line 88: 1mL -> 1 mL (Check it throughout the whole text.) Line 104: 57-116% is averages from 8 PRCs?

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 22585, 2010.