

Atmos. Chem. Phys. Discuss., referee comment RC3
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Comment on acp-2021-253

Anonymous Referee #3

Referee comment on "Measurement report: Receptor modeling for source identification of urban fine and coarse particulate matter using hourly elemental composition" by Magdalena Reizer et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-253-RC3>, 2021

Authors present results of high time resolution measurement of elements in fine and coarse urban aerosols with subsequent identification of sources using a combination of three receptor models.

The paper provides interesting results with detailed insights into the winter pollution sources in Warsaw area.

The paper is suitable for publication in the journal Atmospheric Chemistry and Physics, however, there are a few issues that need to be addressed before acceptance for publication. Minor revisions of the paper taking into consideration the comments reported below are requested.

Comments:

line 19: Exhaust traffic emissions are mostly prevailing in fine (and especially in submicrometre) fraction.

line 34-35: Statement that the greatest health risk is from PM_{2.5} is relative. It depends on considered particle size. The statement is true if you compare PM₁₀ and PM_{2.5}. But it is not true for the comparison of PM_{2.5} and PM₁. PM₁ and especially UFP are more dangerous than PM_{2.5} due to their ability to penetrate deeper into the lung than PM_{2.5} particles.

line 73: It is not true, you have overlooked some papers, for example, Pokorná et al., Sci. Total Environ. 2015, 502, 172–183.

line 118: Add sampling flow rate and volume of passed air per sample.

line 281: Cl originates also from various combustion sources, more details see for example in Mikuška et al, Atmosphere 2020, 11, 688.

line 363-384: Component contribution and time profile of this factor in coarse fraction suggest considering renaming this factor to residential heating.

line 466-469: Mentioned metals could also indicate emissions from waste incinerator. Is there any incinerator in the vicinity?

line 495-501: Br, Se, As are strong markers of coal combustion, so this factor looks rather like combined combustion of coal and biomass (wood).

line 608-609: As far as I know other studies are providing high time resolution measurement in Central Europe, see comment for line 73.

line 626-627: According to my experience, parallel measurement of different PM fractions with shorter time resolution can also provide the same results as high time resolution measurement.