Reviewer comments/suggestions are in *italics* font and our responses are underlined:

Comments of Reviewer #1:

The research question is interesting and the research is sound. But the organization of the materials in this manuscript needs to be improved. Currently, the logic does not flow very well. In addition, there is a concern on using the word "Size distribution" in the manuscript, which is confusing and even sometimes misleading. We know that particle size distribution (PSD) is a special term describing how the particles of interest consist particles of various sizes. But in some cases, the wording "size distribution" in this manuscript meant something different: the adsorption/absorption of your PBDEs on the particles of various sizes. You may want to modify the phrase to make it clear.

R: We have revised the manuscript to improve its readability and clarity. The term "*particle size distribution of xxx compounds*" can be found in many titles of paper published before (see below). Thus, we think that this term is relatively common and suitable in this manuscript. Even so, in order to avoid the further misleading, we modified this phrase in somewhere of this manuscript to "*Size distribution of particle-associated PBDEs*" or "*Size distribution of particle-phase PBDEs*".

Dogruel, S., et al: Effect of Fenton's oxidation on the **particle size distribution of organic carbon** in olive mill wastewater, Water Res., 43, 3974-3983, 2009.

Ladji, R., et al: **Particle size distribution of n-alkanes and polycyclic aromatic hydrocarbons (PAHS)** in urban and industrial aerosol of Algiers, Algeria, Environmental Science and Pollution Research, 21, 1819-1832, 2014.

Lepri, L., et al: **Particle size distribution of organic compounds** in aqueous aerosols collected from above sewage aeration tanks, Aerosol Sci. Technol., 32, 404-420, 2000.

Mandalakis, M., et al: **Particle-size distribution** and gas/particle partitioning of **atmospheric polybrominated diphenyl ethers** in urban areas of Greece, Environ. Pollut., 157, 1227-1233, 2009.

Offenberg, J. H., et al: **Aerosol Size Distributions of Polycyclic Aromatic Hydrocarbons** in Urban and Over-Water Atmospheres, Environ. Sci. Technol., 33, 3324-3331, 1999.

Okonski, K., et al.: **Particle Size Distribution of Halogenated Flame Retardants** and Implications for Atmospheric Deposition and Transport, Environ. Sci. Technol., 48, 14426-14434, 2014.

Ringuet, J., et al: **Particle size distribution of nitrated and oxygenated polycyclic aromatic hydrocarbons (NPAHs and OPAHs)** on traffic and suburban sites of a European megacity: Paris (France), Atmos. Chem. Phys., 12, 8877-8887, 2012.

Shimmo, M., S et al: **Particle size distribution** and gas-particle partition of **polycyclic aromatic hydrocarbons** in Helsinki urban area, J. Atmos. Chem., 47, 223-241, 2004.

Su, P.-h., et al: Laboratory study of the **particle-size distribution of Decabromodiphenyl ether (BDE-209)** in ambient air, Chemosphere, 144, 241-248, 2016.

Tang, X. L., et al: Seasonal variation of the **particle size distribution of n-alkanes and polycyclic aromatic hydrocarbons (PAHs)** in urban aerosol of Guangzhou, China, Environ. Monit. Assess., 117, 193-213, 2006.

Wang, G., et al: Molecular composition and **size distribution of sugars,** sugar-alcohols and carboxylic acids in airborne particles during a severe urban haze event caused by wheat straw burning, Atmos. Environ., 45, 2473-2479, 2011.