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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Micrometeorological measurement of hexachlorobenzene and polychlorinated biphenyl compound air-water gas exchange in Lake Superior and comparison to model predictions" *by* M. D. Rowe and J. A. Perlinger

Anonymous Referee #1

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This is a very interesting piece of work that makes a strong contribution and adds to our knowledge of air-water exchange of PBT. The subject of the manuscript is well developed and highly relevant to scope of Atmospheric Chemistry and Physics Discussion. The authors measure fluxes of HCB and PCBs using a novel chemical concentration measurement method which allow them to evaluate gas transfer parameterization of these chemicals with modified Bowen ratio (MBR). Then those fluxes are compared with model predictions from the Whitman 2 film model and a more complex Internal

Boundary layer Transport Exchange model. Comparisons are discussed including a very good treatment of the uncertainties. The approach used is novel and the description of the model and the experimental methods is well done and clear. This paper presents results of an in-depth, comprehensive investigation conducted on well conceived hypotheses. To my knowledge, this is the first study that has directly measured PCBs and HCB fluxes using micrometeorological measurements. The manuscript is clearly written, with a good and strong abstract and an adequate title. The organization and the presentation of the data are clear and understandable with excellent tables and graphs. I have nothing to fault to this manuscript and I strongly recommend it for publication. Only two minor comments: Page 985, line 26, replace “measurment” with “measurement. Page 995 in the chemical Analysis section the authors state that 144 PCB congeners were measured, but only fluxes for 6 PCBs are reported. Why do the authors only choose to report these congeners out of the 144 measured?

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 983, 2012.