Drink. Water Eng. Sci. Discuss.,
doi:10.5194/dwes-2016-5-AC3, 2016

Open Access
Drinking Water Engineering and Science Discussions

Interactive comment on "Optimized photodegradation of Bisphenol A in water using ZnO, TiO_2 and SnO_2 photocatalysts under UV radiation as a decontamination procedure" *by* Rudy Abo et al.

Rudy Abo et al.

rudy.abo@hotmail.de

Received and published: 31 July 2016

Dear Referee 3, The authors would like to thank you for your constructive comments on our manuscript. Please find below our response to your comments: 1) Page 5 Line 28. It was mentioned that the lower initial concentration of BPA employed higher degradation rate. Once the Y axis value were changed from degradation efficiency (%) to BPA concentration (ppm), the results will be different. How to explain it?

The relative percent increase of the degradation (%) over time is a function of the change in the concentration and can be written as follows:

Printer-friendly version

Discussion paper

Degradation efficiency % = [C0-Ct/C0]*100 ; where C0 is the initial concentration and Ct is the concentration of BPA at specific time. Thus, the degradation efficiency will increase over time and wise versa for the concentration. Please have a look at the provided figure (Fig.1).

2) Page 6 Line 6. It is obvious from Figure 7 that ZnO is a more effective catalyst than TiO2 and SnO2. The band gap was posed as an explanation. How about other mechanisms? It is better to find more theories from literature as support.

The authors improved the corresponding paragraph by providing more information about the mechanism of degradation, ZnO photocatalyst properties with supporting literatures.

3) Page 7 Line 10. It is mentioned that ZnO is a better catalyst in photo-oxidation process and it adsorbs more photon-energy than the other photocatalysts. However, as displayed in Figure 10, the advantage of ZnO over TiO2 and SnO2 were insignificant. Since no duplicate experiment was carried out, the conclusion might be marginal. If the results were accurate, more explanations about mechanisms need to be discussed further.

The authors agree with referee. The mechanism of degradation was considered in more details throughout the new version of the manuscript.

4) It will be better if the results without catalysts can be shown in Figure 7, 9 and 10.

Results of degradation in absence of catalysts were added to the figure 7. Unfortunately, the results without catalysts can't be plotted on the figures 9 and 10 due to the differences in time resolution and missing measurements without catalysts at each 15 min time-interval for this stage of APO. However, Fig. 12 compares different used approaches.

5) Page 7 Line 18. Electrophilic attack of HOCl on the phenoxide ions was raised as the mechanism of oxidation. In combination with Figure 11, more details can be clarified,

Printer-friendly version

Discussion paper

e.g. how does the HOCl attack BPA and the degradation compounds step by step; which positions/sites are preferred by HOCl-attacking.

Authors agree the referee, more details added to the corresponding paragraph.

6) Page 7 Line 31. There was no result which showed ZnO is very stable during the degradation process. Please cite reference articles.

The mentioned paragraph was modified with supporting references.

Interactive comment on Drink. Water Eng. Sci. Discuss., doi:10.5194/dwes-2016-5, 2016.

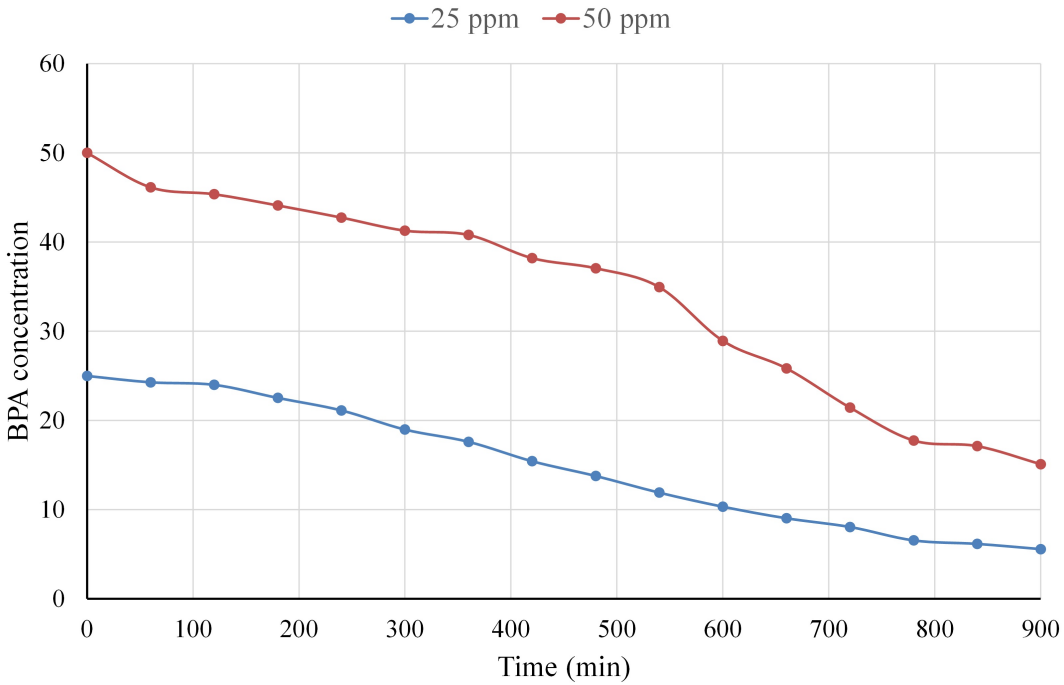

Fig. 1.

Printer-friendly version

Discussion paper