

Interactive comment on “Conversion of organic micropollutants with limited bromate formation during the Peroxone process in drinking water treatment” by A. H. Knol et al.

Anonymous Referee #1

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In general, the authors present a solid research manuscript on the efficacy of peroxone for the removal of organic micropollutants, the amount of bromate formed during this AOP, and the influence of water matrix parameters.

The reviewer has several small remarks on the manuscript

Page 23, line 8-10: It is good that Dunea complies to the Dutch drinking water standards, but that is not relevant for this manuscript.

Page 24, line 26-28: The authors indicate that even if a maximum of 1 ug/l bromate is reached after peroxone, these concentrations will be lower after artificial recharge. Is this solely due to concentration averaging, or can biological degradation of bromide

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also be expected? If so, what are the limits of this system? Could this imply that bromide concentrations > 1 ug/l in the peroxone effluent/ MAR influent could be acceptable as well?

Page 26, line 14: an additional AOP is used to treat peroxone effluent before discharge. Is this sufficient? It is to be expected that OMPs that are poorly degraded in the peroxone AOP would also be resistant to degradation in the subsequential AOP.

Page 27, line 16: OMP concentrations were varied, based on their limit of detection. The OMP concentration could also affect their degradation efficacy, and as such, makes it harder to compare between the degradation of different OMPs. An alternative approach would be to select the critical concentration (e.g. 30 ug/l) for all OMPs.

Page 31, line 6: Be more clear here if this figure is based on lab experiments under controlled conditions (where only one parameter is varied), or that these are measured values in the surface water matrix. Only further in the manuscript, it becomes clear that it is the latter.

Page 29, line 13/14: Why is Atrazine used as a proof of principle for the peroxone test? Would this imply that, if peroxone would be unable to degrade atrazine, it would also be unable to degrade the other OMPs that were tested?

Page 31, line 20-21: Is bromide mainly formed due to reactions with ozone, hydroxyl radicals, or both equally?

Figure 2: why is there a bypass for the first two injection points?

Figure 3, 4: Please also mention the relevant water quality parameters during these tests (bromide concentration, HCO₃⁻, DOC, temperature).

Figure 5, 9: The x-axis of these figures in no unit, but a category (peroxone settings, OMP type). As such, it is not correct to draw a curve between the datapoints, as these are independent of each other.

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Figure 6: Investigate the correlation between these parameters. In Figure 7, it is indeed found that HCO₃ and water temperature are correlated. How about the other parameters, e.g. bromide concentration or pH? If there are not other correlations, that should also be mentioned.

textual

page 22, line 7: "the height of the ozone dose" is a Dutch sentence construction that is not common in English

page 23, line 17: I would use a different word than "structurally", e.g. "consistently". I don't think that "structurally" is used in English to indicate consistently, and moreover, it can be confusing in this sentence, as it could also refer to detecting chemical structures of pharmaceuticals and pesticides.

Interactive comment on Drink. Water Eng. Sci. Discuss., 8, 21, 2015.