

Interactive comment on “Natural organic matter removal by ion exchange at different positions in the drinking water treatment lane” by A. Grefte et al.

A. Grefte et al.

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Received and published: 5 October 2012

We would like to thank the referee for his comments.

Summary of the specific comments:

A conclusion that the options are approximately equal with little to choose, would be better substantiated.

The practical value of the paper would be enhanced if the incremental costs of IEX could be presented with the overall treatment cost. It would be most useful to see by what percentage the overall treatment would be increased.

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Response:

We agree with the comments. We will rewrite p386 line 15-19 to: In Table 5 the estimated operational and fixed costs are given. The highest IEX costs are 0.0656 € m⁻³ when IEX is placed before coagulation. The cheapest option is to place IEX before ozonation, but the difference in costs between these two positions is only 6%. The costs for waste are 34% of the total costs. Brine treatment by NF, which means 90% waste reduction (Schippers et al., 2004), will reduce the price.

And p387 line after line 19 will be added: The costs for placing IEX before coagulation are 0.0486 € m⁻³ (see Table 6), the total production costs of drinking water at Loenderveen and Weesperkarspel treatment plant are 0.1592 € m⁻³ (Barrios et al.(2008)) and the consumer pays 1.70 € m⁻³ (Vewin.nl). By addition of IEX before ozonation the production costs would increase by 31% and the price for the consumer would increase by 2.9%.

And p389 line 1-6 to: The operational costs were assumed to be directly dependent of the NOM removal rate and determined the difference between the IEX positions. The difference in total costs for IEX for the three positions were approximately equal (0.0631 € m⁻³), however the savings on following treatment processes caused a cost reduction for the IEX positions before coagulation and before ozonation compared to IEX positioned after SSF. IEX positioned before coagulation or ozonation were most cost effective and produced the highest water quality.

Corrections:

p376 line 25 Extend = extent p377 line 17 Regeneration misspelt p380 line 14 mm = _m
p382 line 26 than = then p384 line 26 treatement = treatment p394 third last line Why
comma? Response: we will change these mistakes

Interactive comment on Drink. Water Eng. Sci. Discuss., 5, 375, 2012.

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