Degradation of specific aromatic compounds migrating from PEXpipes into drinking water

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Nine specific compounds identified to migrate from polyethylene (PE) and cross-linked polyethylene (PEX) into drinking water were investigated for their degradation in drinking water. Three sample types were studied: field samples (collected at consumer taps), PEX pipe water extractions, and water samples spiked with target compounds. Four compounds were quantified in field samples at concentrations of 0.15e8.0 mg/L. During PEX pipe water extraction 0.42 ± 0.20 mg NVOC/L was released and five compounds quantified (0.5e6.1 mg/L). The degradation of these compounds was evaluated in PEX-pipe water extractions and spiked samples. 4-ethylphenol was degraded within 22 days. Eight compounds were, however, only partially degradable under abiotic and biotic conditions within the timeframe of the experiments (2e4 weeks). Neither inhibition nor co-metabolism was observed in the presence of acetate or PEX pipe derived NVOC. Furthermore, the degradation in drinking water from four different locations with three different water works was similar. In conclusion, eight out of the nine compounds studied would e if being released from the pipes - reach consumers with only minor concentration decrease during water distribution.

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