PROJECT: SENSOR
SYSTEM: RAS
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CtrlAQUA

Does peracetic acid impact the quality of dissolved organic matter (DOM) in RAS?

DURATION: 2017 – 2022

SALINITY TESTED: Brackish water and salt water

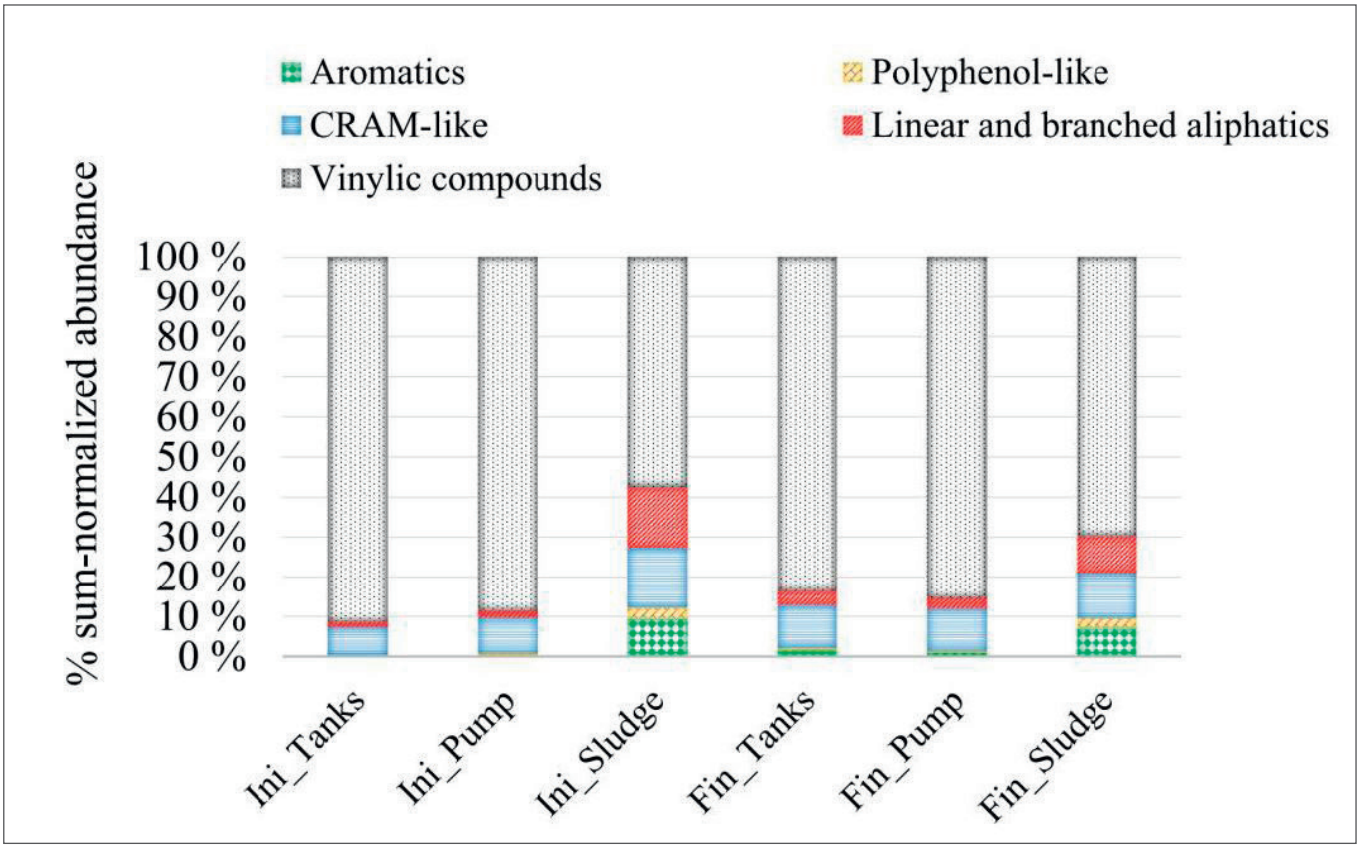
HIGHLIGHTS:

- Achieve better knowledge on changes in dissolved organic matter in authentic RAS water and sludge (CCS/S-CCS) exposed to disinfectant (peracetic acid).
- RAS water before exposure to peracetic acid was dominated by unsaturated and CHO type compounds, particularly those with vinylic structures.
- CHO type compounds were the lowest in abundance in the sludge samples, which were rich in CHOS, CHON, unsaturated and aliphatic type compounds particularly those with carboxyl-rich alicyclic materials and linear and branched aliphatic structures.
- After exposure to peracetic acid a slight decrease in the unsaturated compounds, while CHOS, CHON aliphatic and aromatic compounds were formed (especially carboxyl-rich alicyclic like molecules or linear and branched aliphatic structures).
- The transformation of dissolved organic matter from sludge samples with the exposure of peracetic acid followed the opposite trend, increasing unsaturated compounds, particularly with vinylic key structures and decreasing aliphatic compounds, particularly with linear and branched key structures during the peracetic acid application.

RECOMMENDATIONS:

- Organic matter in RAS water exposed to peracetic acid results in unsaturated molecules and CHOS, CHON aliphatic and aromatic compounds are formed. The potential impact on fish health and fish quality are not fully understood..

The factsheet is ready for implementation, but with the note that the testing has not been done for all industrial relevant conditions.



Comparison of the sum-normalized abundances in the percentage of DOM key structures before and after PAA treatment