

## Marine biodegradation of discharged chemical components –

### Approaching actual environmental biodegradation kinetics

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Biodegradation is one of the main removal processes of chemicals in the environment. High-quality and environmentally relevant biodegradation data is needed for assessing and minimizing the environmental risks and impacts of discharges of chemicals. This research aims at approaching the actual biodegradation kinetics of chemicals in the marine environment. Produced water from a platform in the North Sea (emitted chemicals) was thus diluted in seawater (native degrader microorganisms) in a novel biodegradation testing approach<sup>1</sup>. A series of parallel biodegradation experiments were run for 60 days at different dilution levels (see figure below). These experiments yielded a large set of biodegradation kinetic data for known and unknown chemical components, and at different dilution factors. Biodegradation kinetics were generally faster at a higher dilution. The main challenge is now to assign more of the obtained biodegradation kinetics to the discharged chemicals.

<sup>1</sup>Birch, H., Hammershøj, R. & Mayer, P. (2018). Determining Biodegradation Kinetics of Hydrocarbons at Low Concentrations: Covering 5 and 9 Orders of Magnitude of  $K_{ow}$  and  $K_{aw}$ . *Environmental Science and Technology* 52: 2143-2151. DOI: 10.1021/acs.est.7b05624.

