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Abstract

A Bioremediation : Investigation of tributyltin degradation in Biotechnology

Amélie Polrot
Liverpool John Moores University, L3 3AF, United-Kingdom

Abstract:

Active Nautical Depth is a promising method to fight against siltation in ports and harbours by mixing the sediment in situ, turning it into a navigable fluid mud. The implementation of AND allows a reduction of dredging need and thus has the potential, among other benefits, to decrease carbon emission associated with sediment transportation.

This study therefore aims to better understand the factors controlling tributyltin biodegradation in sediment in order to optimize the implementation of AND. This is done by conducting microcosm experiments under different environmental scenarios and comparing TBT degradation rates. We also aim at obtaining a better comprehension of the microbial community implicated by the use of a new approach for bacterial isolation, the iChip.

Results will be obtained by February 2020, we expect higher degradation rates under higher temperature, aeration exposure and agitation frequency (which will influence aeration) as TBT degradation is known to be performed aerobically and as increasing temperature is known to increase microbial activities.

These results could be used to optimize AND application, by running it during warmer seasons and adapting the duration of sediment exposure to the air before its pumping back to sea bottom. Overall, the results of this study will extend our knowledge on TBT degradation in marine sediment.

Biography:

Amélie Polrot is a PhD student in the School of Natural Sciences and Psychology at Liverpool John Moores University. Her current research in the field of marine bioremediation involves Microbiology, Chemistry and Sedimentology. Her work focuses on assessing environmental factors controlling tributyltin biodegradation activity in sediment in order to optimize the implementation of a sustainable method for sediment management in ports and harbours.

Publication of speakers:

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