

## **Microbial ecology in hydrocarbon-contaminated coastal environments**

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Little is known as yet about hydrocarbon biodegradation within the transitional zone from oxic to anoxic conditions in marine environments. Oxic/anoxic oscillations influence the microbial dynamic and its role on hydrocarbon degradation. It is thus important to determine the behavior of microbial communities in such oscillating conditions.

Maintaining sediments under conditions as close as possible to those prevailing in the environment allowed to propose a scenario describing the petroleum influence on microbial communities. After an adaptive stage, the modification of the microbial community structure occurred, concomitant with the beginning of the degradation of hydrocarbon compounds, followed by a succession of bacterial community structures along the degradation process. Submitting sediments to different oxygenation regimes in bioreactors showed the influence of the oxygenation on microbial assemblages and hydrocarbon degradation, which was favoured by oxygenation after a period of anoxia.

Applying different strategies of experimental ecology, our studies highlight the functional redundancy of microbial communities involved in hydrocarbons degradation. Better understanding the behaviour of microbial communities in oscillating conditions is essential to build strategies for managing microbial resources for bioremediation processes.