

Changes in Microbial Populations Affected by Oil Spill in Gulf of Mexico

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The Gulf of Mexico oil spill in 2010 damaged properties and the environment, devastated the tourism and seafood industries, and caused health problems for humans in the affected communities. It revealed serious weaknesses in the ability of oil industry, federal, state and local governments to respond in a coordinated manner. In addition, the oil spill underscored the weaknesses of current technologies for remediation of the cleanup: costly, time-consuming, and ineffective. In this project, microbial community structures in oil-contaminated sediments were investigated to search and identify the microorganisms that possess an oil-degradation activity. Sediment samples were collected from three different sites at Lake Pontchartrain (New Orleans, LA) and the presence of oil in one sample was visually confirmed. Culture-independent molecular techniques were used to analyze total microbial community structure and to identify the major microbial species. In brief, total environmental DNAs were extracted and analyzed by PCR-DGGE to monitor microbial community structures. DGGE bands of interest were sequenced and phylogenetically analyzed by bioinformatic tools. Our data help to refine techniques to isolate oil-degrading microorganisms, to understand oil degradation pathway, and to develop new bioremediation strategies.

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