



Conference Abstract

# Response of Microbial Community Stability to Chemical Oxidation Remediation Process in a Petroleum Hydrocarbon Contaminated Groundwater Site

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## Abstract

The stability of the microbial community is a vital indicator of microbial ecosystems. However, the mechanism of microbial community stability during in situ chemical oxidation in petroleum-hydrocarbon-polluted groundwater is unclear. This study analyzed the biomass, diversity, co-occurrence network feature and negative cohesion of microbial community at different stages to identify the changes in microbial community stability under chemical oxidation. In addition, microbial module compositions and crucial functions were analyzed to further explore the reason for the change in community stability at the module level. Multiple regression analysis was conducted to explore the microbial module explanatory degree to microbial community stability changes. The results indicated that the microbial community stability was destroyed by chemical oxidation. The carbon source effect was the main reason in the early oxidation stage, while the oxidation stress effect was the main reason in the late oxidation stage. Most microbial modules were transformed from K-strategists to r-strategists, and modular keystones were transformed to stress-tolerant species in the oxidation stage. This study suggested that microbial clusters were essential indicators of the microbial community in petroleum hydrocarbon groundwater during the chemical oxidation period.

## **Keywords**

in-situ chemical oxidation, microbial community stability, microbial modules, multiple linear regression

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