

## Influence of pseudomonas aeruginosa presence in the biodegradability study of solvent-based and water-based dispersant in oil spill handling

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### Abstrak

Oil-Spill Dispersant (OSD) reduces interfacial tensions of oil and water turning oil spill into droplets that makes crude oil easier to be degraded by hydrocarbonoclastic bacteria such as *Pseudomonas aeruginosa*. The purpose of this study is to assess the effect of dispersant utilization (solvent-based and water-based) related its performance efficiency in the presence of *Pseudomonas aeruginosa*. The research was carried out in laboratory, varying Dispersant-Oil Ratio (DOR) into 3 levels (1:8, 1:20, 1:25) and carbon source adaptation into 3 levels (0%, 1%, 2%). The total number of samples prepared was 84, consist of 21 samples without *Pseudomonas aeruginosa* addition and 63 samples with *Pseudomonas aeruginosa* addition. Total petroleum hydrocarbon (TPH) is measured using gravimetric method to determine the biodegradation of crude oil. Also measured are pH of samples with *Pseudomonas aeruginosa* addition and COD (Chemical Oxygen Demand) value of samples with dispersants. Data were evaluated using ANOVA. The result shows *Pseudomonas aeruginosa* has the ability to degrades crude oil despite the presence of dispersant, whereas the use of water-based dispersant showed better biodegradation ability than solvent-based OSD usage. Dispersant effectiveness of solvent-based and water-based is 33% and biodegradation by *Pseudomonas aeruginosa* achieved 25% in 72 hours.