A Report on

Oil Biodegradation in Oil contaminated wastewater Efficiency Test

With BIOREMEDIATION AGENT "KEEEN-Oil Spill Control"

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22 April 2011

Test Number 1 Oil Biodegradation in Oil contaminated wastewater Efficiency Test

With Bioremediation agent "KEEEN-Oil Spill Control"

In this experiment, it was aimed to test the efficiency of oil biodegradation in 100 ml. of oil contaminated wastewater. Firstly, the scientist took 2 bottles of wastewater into a beaker (250 ml). The 1st bottle is the control sample without adding bioremediation while the 2nd bottle was filled with a bioremediation agent called KEEEN-Oil Spill Control 1 ml (1: 100). The experiment was conducted twice with the two samples. Then, the samples were tested for the parameter of COD* and oil & grease at Day 0. After that the samples were placed on the shaker at 150 rpm at 30 degrees Celsius. Once it is Day 7, 14 and 28, the samples were again tested for the parameter of COD and oil & grease.

According to the findings, it shown that there was evidence of biodegradable reaction in the controlled sample since there were natural bacteria; therefore, they grow and continue to degrade the oil. At first the number of natural cells was not prevalent causing low degradation rate. It shown that the COD level decreased by 40%, 50% and 70% on day 7, 14, and 28, respectively. In comparison with the sample with bioremediation agent, the degradation rate was higher than the controlled sample by which the level of COD declined 73%, 80% and 85% on day 7, 14, and 28, respectively. It took 7 days for the sample added with bioremediation agent to decrease by 73% while the controlled group took a longer period of time at 28 days to dwindle by 70%. In regards to oil & grease parameter, the controlled group took a longer period to degrade than the sample with the bioremediation agent sample. Similarly, the level of oil & grease of the bioremediation agent sample at day 7, 14, and 28 decreased by 31%, 70% and 83%, respectively whereas the level for the controlled samples decreased by 11%, 50% and 68% at day 7, 14 and 28, respectively (shown in Table 1).

*COD = chemical oxygen demand.

Table 1 The level of efficiency of bioremediation agent – KEEEN Oil Spill Control

Day of the experiment	COD (mg /l)		Oil and grease (mg/l)	
	The controlled sample without KEEEN OIL SPILL CONTROL	The sample with KEEEN OIL SPILL CONTROL	The controlled sample without KEEEN OIL SPILL CONTROL	The sample with KEEEN OIL SPILL CONTROL
Day 0	1036±27 Starting at100%	1927±176 Starting at100%	270±14 Starting at100%	250±14 Starting at100%
Day 7	653±38 Declined by 40%	529±72 Declined by 73%	239±17 Declined by 11%	176±12 Declined by 31%
Day 14	618±6 Declined by 50%	447±59 Declined by 80%	133±4 Declined by 50%	97±3 Declined by 70%
Day 28	276±15 Declined by 70%	307±9 Declined by 85%	86±8 Declined by 68%	44±7 Declined by 83%

Test No. 2 Oil Biodegradation in Engine Oil Efficiency Test

In this experiment, it was aimed to test the efficiency of oil biodegradation in 100 ml. of oil contaminated water. Firstly, the scientist took 2 bottles of wastewater into a beaker (250 ml) then filled with engine oil (500 mg) in both bottles with using a weighing scale. The 1st bottle is the

controlled without bioremediation agent while the 2nd bottle is filled with a bioremediation agent called Oil Spill Control 1 ml (1: 100). The experiment was conducted twice with the two samples. Then, the samples were tested for the level of COD and oil & grease at Day 0. After that the samples were placed on the shaker at 150 rpm at 30 degrees Celsius. Once it was Day 10, 25 and 35, the samples were again tested for the level of COD and oil & grease.

According to the results, when compared with the sample with added bioremediation agent - KEEEN Oil Spill Control, the controlled sample took longer to remove the oil than the samples with added bioremediation agent based on the remaining level of oil & grease.

In regards to oil & grease level, the sample with added bioremediation agent at day 10, 25, and 35 declined by 62%, 88% and 95%, respectively whereas the level for the control sample declined by 15%, 42% and 62% at day 10, 25 and 35, respectively (shown in Table 2).

Table 2 Biodegradation in Engine Oil Efficiency Test

Day of the experiment	Oil and grease level (mg/l)	
	The controlled sample without KEEEN OIL SPILL CONTROL	The sample with KEEEN OIL SPILL CONTROL
Day 0	5018±16 Starting at 100%	4960±30 Starting at 100%
Day 10	3900±207 Declined by 15%	1710±237 Declined by 62%
Day 25	1710±237 Declined by 42%	553±99 Declined by 88%
Day 35	553±99 Declined by 62%	246±50 Declined by 95%

References

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2) Standard Method for the Examination of Water and Wastewater. APHA, AWWA 21st edition, 2005 Chapter 9221.

3) FOG Analysis using Modified Gerhardt Soxtherm Rapid Soxhlet Extraction Systems.