

EXECUTIVE SUMMARY

Bio-Aquatic Testing, Inc. located at 2501 Mayes Rd. Suite 100 Carrollton, Texas 75006 was contracted by American Cleaning Technologies to test the effectiveness of their bioremediation product, ACT Bioremediation Product, using Environmental Protection Agency (EPA) protocol listed in 40 CFR Chapter 1 (7-1-99) Pt. 300 Appendix C, Item 4.0. The test protocol calls for application of products onto ANS 521 oil. The product was applied to test flasks according to manufacturer's specifications and protocol. Samples were sacrificed on Day 0, Day 7, and Day 28 of the test period. Each replicate of product and control were tested for continued microbiological viability over time, reduction in weight via gravimetric analysis, and reduction in alkane and/or aromatic constituents via Gas Chromatography/Mass Spectroscopy (GC/MS). The product was deemed effective if the data showed the GC/MS product results for Day 28 treatments to be statistically less than the Day 28 controls and Day 28 treatments to be statistically less than Day 0 treatments.

GC/MS data for Days 0, 7, and 28, were consolidated and analyzed with the Minitab Statistical program version 15. Data was analyzed for a significant difference between controls and treatments (products) using a General Linear ANOVA Model with Dunnett's and/or Tukey's means comparison test.

GC/MS analysis showed significant reduction of alkane constituents of the test oil using ACT Bioremediation Product, as indicated by the statistically significant difference between the Day 28 controls and Day 28 treatments as well as between the Day 0 and Day 28 treatments.

Data analysis of the GC/MS analysis showed significant reduction of aromatic constituents of the test oil using ACT Bioremediation Product as indicated by the statistically significant difference between the Day 28 controls and Day 28 treatments as well as between the Day 0 and Day 28 treatments.

Microbiological results showed continued viability of the oil-eating microorganisms over time. The surrogate compounds, d-10 phenanthrene and 5- α androstane showed excellent recovery indicating the test to be valid.

Based on the parameters of this test, the product should be deemed effective for inclusion on the NCP list of approved bio-remediation products.

Summary Data Table:

DAYS	TREATMENT	TOTAL MEAN ALKANES (PPM)		TOTAL MEAN AROMATICS (PPM)	
0	CONTROL	29,969	RED% 28 DAYS	9,018	RED% 28 DAYS
	NUTRIENT	29,102		8,582	
	ACT Bioremed. Product	27,685		8,240	
7	CONTROL	24,289		6,974	
	NUTRIENT	18,132		6,377	
	ACT Bioremed. Product	2,614		3,306	
28	CONTROL	18,909	36.9%	4,426	50.9%
	NUTRIENT	1,465	94.9%	5,609	34.6%
	ACT Bioremed. Product	113	99.6%	475	94.2%