Case Study

Tyco Earth Tech – Soil Bioremediation

Summary:

In June 2006 EarthTech (a member of the Tyco group of companies) undertook the bioremedial clean-up treatment of hydrocarbon contaminated muddy gravel at one of their sites in Hungary. The muddy gravel was contaminated with TPH levels in excess of 300,000 mg/kg in parts and was a stern test for the feasibility of bioremediation within the region.

The project was undertaken using SpillAway Brands™ products and concluded in September 2006 as a complete success, in less than 120 days, including an initial 60 day test period during which time only 10% of the total volume of contaminated soil was treated (the remaining volume being bioremediated within just 60 days).

Description of the treatment:

Task: Bioremediation of contaminated muddy gravel on site.

Contamination profile: Ex-Situ contaminated muddy gravel laid in a 4000 m² basin sealed with foil.

Volume to be treated: c.400m³

Initial Soil Analysis (Day 1):

Sample No.	Sample Type	Laboratory analysis		
		TPH (mg/kg)	∑ **PAHs** (mg/kg)	**Dry Matter** %
6-1	Composite	310,000	1,100	44.9
6-2	Composite	252,000	896	45.6

Treatment procedure:

Step 1: Primary Test (40m³)

Initially, an area of 400m² was isolated within the project basin and contained by a gravel wall and 40m³ of contaminated muddy gravel was treated. This test area was filled up to a level of 20cm with water and a pre diluted mixture of Liquid Remediact™ and HC-300™ and increased oxygen circulation was assured through airlines.

Monitoring began on day 30 after initial treatment and showed a great reduction in TPH levels.

Soil Analysis Day 30:

Sample No.	Sample Type	Laboratory analysis			
			TPH (mg/kg)	**TPH** (mg/kg)	**Dry Matter** %
6-3	Composite	C5-12 C13-40	2880 92,300	95,200	82.0
6-4	Composite	C5-12 C13-40	893 33,300	34,200	86.8

Step 2: Main Project Implementation (400m²)

Following the rapid degradation of hydrocarbons within the test area, at day 60 the isolated test area was opened and the remaining untreated soil was saturated with water and pre-diluted Liquid Remediact™ and HC-300™ in the same method stated in Step 1 and allowed to mix with the test area's already active bio-colony.

On day 85 a final treatment was completed with SpillAway Liquid Remediact™, SpillAway OWS-200™ and SpillAway FleetKleen™, whilst keeping airlines functioning for circulation.

On day 107 the contamination level approached the targeted limit as shown on the table below.

Soil Analysis Day 107:

Monitoring Phase	Sample No.	Sample Date	Sample Type	Laboratory Analysis			Average Contamination Grade		
				TPH mg/kg	∑ PAHs mg/kg	Dry Matter %	TPH Mg/kg	∑ PAHs mg/kg	Dry Matter %
Completion	6-9	28/09/06	composite	3,980	2.98	94.1	4,045	2.6	91.6
	6-10	28/09/06	composite	4,110	2.25	89.1			
Gravel Clean Up Target Limits				3,000	25		3,000	25	

Since the degradation of hydrocarbons will continue after the final sample was taken the test was closed and concluded with result of successful treatment and clean up.

Budapest
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