

Remediation project under railroad



Terreco's patented PuriSoil® remediation technology is currently being used to clean 2600 m³ of contaminated soil at the Chemelot / DSM industrial facility at Geleen, The Netherlands.

Summary

Soil contamination occurred when a gasoline pipeline situated (0.5 meters) above ground sprang a leak. Gasoline (BTEX) from the leaking pipeline spread over an area of 350 m², penetrating the soil to a depth of 8 meters into the local water table.

To try to contain the spillage, ground water was pumped up and cleaned from the contaminated area, which was situated under a small hill and railroad line.

Remediation work to clean the contaminated soil began following installation of the PuriSoil® technology. The remediation process was controlled using strategically positioned monitoring devices placed in the bio-active layer to measure VOCs and Oxygen levels.

Periodical measurements have shown that no emission of VOC has occurred to the surrounding environment during the whole remediation process.

One year after the start of the remediation work using PuriSoil® it was found that the spread of the BTEX had been halted and that the ground water was clean, thus obviating the need to continue pumping the ground water for cleansing purposes. The remediation was successfully finished within 4 years.





Data	
Location	Industrial area; under railroads located in Stein, the Netherlands
Customer	DSM Divisie Hydro Carbons, DHC on the Chemelot location
Pollution and concentration	In the unsaturated zone 1300 kg BTEX was present in 2600 m ³ ground. At the start, the maximum concentration of BTEX was 1000 mg/kg.
Contaminated area	Area 350 m ² . Contamination was present up to 8 m below the surface. The soil consists of gravel, sand and loam. The contamination was present in the unsaturated zone and in the ground water.
Started	1999
Finished	2003

The pumping of groundwater to prevent the spreading of BTEX was stopped one year after the start of the remediation. As a result of the remediation with the PuriSoil technology the transport of pollutants to the groundwater was terminated. Four years after the start of the remediation the soil quality was determined by the analysis of soil samples. In the table below the results of the remediation are summarized.

Results

depth (m-mv)	benzene start	end	removal
0-3	470.5	0.09	99.98%
3-6	1200	<0.05	100.00%
6-9	2.1	<0.05	100.00%

The effectiveness of PuriSoil[®] in decontaminating ground water, quickly obviates the requirement to pump it to the surface for cleaning.

Conclusions

Further more, this can be achieved within a relatively short period of starting the remediation work.

This case study clearly shows that the PuriSoil[®] process can be used as a non intrusive, cost-effective remediation technology that does not disrupt the day-to-day business activities of the client.