

The Challenge:

- A furnace oil spill occurred at a residential property. The hydrocarbon plume migrated through the shallow surficial soils into the bedrock. The residence was demolished to facilitate the site remediation.
- Bioremediation was used by the initial consultant but was unsuccessful at removing residual concentrations of PHC (F1 to F4) fractions.

The OxyTek Solution:

- A series of eight injection wells were installed in the bedrock, in the footprint of the former residence. OxyTek-L™ was injected into the wells, to reduce PHC concentrations to meet Regulatory criteria.
- OxyTek-L™ reduced hydrocarbon levels to meet Regulatory criteria in one injection event. Closure of the project was achieved in 10 days.



Injection wells installed in bedrock in the footprint of the former residence

Background:

In 2005, a furnace oil spill occurred at a residential property in Tichborne, Ontario. The furnace oil migrated through the shallow surficial soils into the bedrock located approximately 1 m below grade. The area of impairment encompassed approximately 132 mt at a depth of 5 to 8 m below grade level. Initial remedial activities were undertaken by others, which included excavation and disposal of the surficial soils and demolition of the residence. The bedrock below the residence was blasted and a bioremediation program was implemented. Oxy Teknologies Inc. was retained after initial remediation efforts were unsuccessful. Elevated concentrations of the F2 and F3 fractions of PHC persisted in groundwater, which were treated using OxyTek-L™.



OxyTek-L™ at work, with the oxidation process generating oxygen in the water

Process:

Eight injection wells were installed in the bedrock. OxyTek-L™ was injected into the wells using a low pressure / low volume pump over a two day period. The treatment was allowed to stabilize for 10 days prior to sampling.

The site remediation was completed to meet Ontario Ministry of the Environment (MOE) Regulation 153, Table 2 criteria for residential property use criteria.



**OxyTek™ Case Study 100058:
Furnace Oil Spill Response, Tichborne, Ontario**

Soil Concentrations Pre-Treatment and Post-Treatment using OxyTek-L™

Concentrations of petroleum hydrocarbon (mg/kg) fractions after 10 days.

	PARAMETERS:							
	BTEX				TPH			
	Benzene	Toluene	Ethyl-benzene	Xylene	F1 – F2		F3 - F4	
Regulations*:	0.24	2.1	0.28	25	30	150	400	2800
SAMPLE BR-D3								
Sep 8/06 (pre-treatment)	<0.05	<0.1	<0.1	<0.3	<20	191	262	24
Dec 7/06 (post treatment)	<0.05	<0.1	<0.1	<0.3	<20	<20	150	<20
SAMPLE BR-F3								
Sep 8/06 (pre-treatment)	<0.05	<0.1	<0.1	<0.3	<20	270	409	<20
Dec 7/06 (post treatment)	<0.05	<0.1	<0.1	<0.3	<20	<20	<20	<20

*Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, March 4, 2004, Table 2: criteria, Residential / Institutional / Parkland property uses

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