OXY TEKNOLOGIES INC.

OxyTek™ Case Study 10010: Dairy Transformation Plant, Quebec

The Challenge:

- Two Bunker "C" underground storage tanks were previously installed on-site. PAH contamination was present in the soils of the former tank farm area and below the building, and the groundwater was also impacted.
- All work had to be completed as daily milk plant operations continued.
- Previous environmental site assessments were completed by other consultants and these remedial activities were unsuccessful.

The OxyTek Solution:

- Thirty injection wells were installed to 7 metres inside the building and in the former tank farm area.
- OxyTek-S™ was injected into the wells, to reduce PHC concentrations to meet Regulatory criteria. Ministry of the Environment (MENV) Generic C criteria objectives were achieved.

OxyTek-S™ being injected in wells installed outdoors.

Background:

In the past, numerous remedial efforts had been unsuccessful. Excavation and disposal of the impacted soils was not viable as the impairment was present below the building. Previous bioremediation efforts were ineffective. In 2006, Oxy Teknologies Inc. was retained by the new property owners to oversee the remediation of the facility. Soils conditions on-site and below the building consisted of layers of sand, clay and granite boulders. The majority of the thirty injection wells were installed using a Beaver drill rig, which was sufficiently small to be used indoors (8 ft ceilings) while the milk plant continued operations. Due to the soil conditions, completion of one injection well could take up to 24 hours. Initial concentrations of PHC (C_{10} to C_{50} range) in soil were up to 22,000 ppm and in the groundwater up to 460,000 ppb.

Chemical reaction of OxyTek-S™ in former tank farm area

Process:

A series of thirty injected wells were installed to 7 m bgl. Due to the soil conditions and to prevent migration into the nearby river, the OxyTek-S™ was injected as a slurry into the wells.

The site remediation was completed to meet Ministry of the Environment (MENV) Generic C criteria. Site closure was achieved within 45 days.

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Groundwater Concentrations Pre-Treatment and Post-Treatment using OxyTek-S™

	PARAMETERS:				
	PHC (C_{10} to C_{50})	**Napthalene**	**Phenanthrene**	**Benzo(b+j+k) fluoranthene**	**Benzo(a) pyrene**
Regulations*:	3,500	340	30	4.9	4.9
Highest ppb levels obtained:					
Pre-treatment	**460,000**	**440**	**880**	**100**	**44**
Post-treatment	<3,500	<340	<30	<4.9	<4.9

All values in ug/L – ppb – parts per billion MDL – method detection limit
< – below detection limit **Parameter exceedence**
* Ministry of the Environment (MENV) Generic C – SSW – Seepage into surface water or infiltrations into sewers criteria

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

	PARAMETERS:				
	PHC (C_{10} to C_{50})	**1 Methyl Napthalene**	**2 Methyl Napthalene**	**1,3 dimethyl Napthalene**	**2, 3, 5 trimethyl Napthalene**
Regulations* :	3,500	10	10	10	10
Highest ppm levels obtained:					
Pre-treatment	**22,000**	**28**	**44**	**41**	**16**
Post-treatment	<3,500	<10	<10	<10	<10

All values in mg/kg – ppm – parts per million MDL – method detection limit
< – below detection limit **Parameter exceedence**
* Ministry of the Environment (MENV) Generic C

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