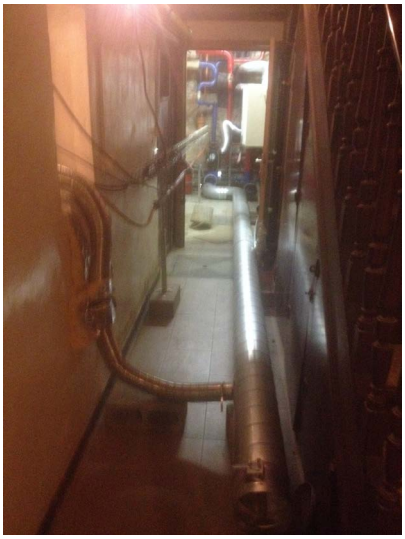
ISTD/ I-14-03
DRAPIERS - BRUSSELS (BE)

Context

The site is located at Ixelles, Brussels, rue des Drapiers 26. The pollution is due to a oil tank leaking in the basement of the Association des Carmélites de Saint-Joseph's building.



Project Description

The remediation area has a ceiling height of 2.5m and the access is only possible by taking the stairs which are <1.5m large. The room is ventilated by a small window which will be able to welcome the evacuation network for the combustion gases, with connection to the boiler room.The average levels of total hydrocarbons in the basement are of 12000mg/kg DM, but a maximal level of 18000mg/kg DM has been noticed on one of the samples. The remediation target is of HCT<300mg/kg DM.

At the end of the work, the three heating tubes were left in place. They were filled with sand and then covered with a patch cement in the lead.

Contaminants were reburned during the process, which means that no pollutant were collected after treatment. For this site, the flue gases were evacuated through the boiler chimney using a temporary network installed specifically for this purpose (stainless steel ducts). Gases at the circuit's ending were monitored with a gas analyzer.

Monitoring

Temperature in the cold points monitored on the first day were initially of 15°C as shown in the temperature reading below. It evolved to an average of 3°C from day to day.
In general, the progression of the temperature is slower than on our projects whose device is in triangle. This is due to the dispersion of heat and the fact that a single heat source provides floor heating. In other words, we are not in usual treatment conditions, where three burners ensure the thermal desorption process by conduction of heat in soils contained in an area delimited by a triangle. The decision to prolong the treatment was thought out and taken on the basis of temperature monitoring, in order to be in agreement with the target temperatures included in our kinetic study (between 150 and 200 ° C).

Key words

Contaminants
TH : C10 – C40

Max. concentration
18.000 mg/kg DM

Volume
66m3

Tonnage
118.8 Tons

Nb of heating tubes
3 (L=9m)

Temperature Target
200°C

Heating duration
42 days

Treatment targets
<300 mg/kg DM

Location
Brussels - Belgium

Future Use
Residential

Client
Carmélite St Joseph

Partner
/

Consultant
MAVA

Date
2014

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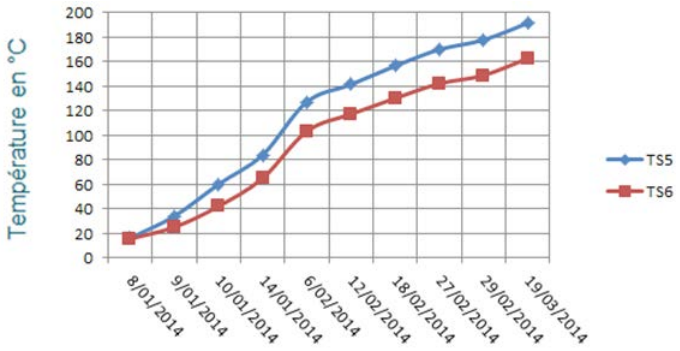

To increase the efficiency of the treatment, an insulation layer has been placed on the entire installation. Thus, to monitor ground-level temperatures, a thermocouple was placed between the concrete and the insulation layer.

Temperatures displayed throughout the treatment were approximately 92°C. It is therefore easy to see that compared to the ambient temperature of 26°C, the insulation prevented heat loss at the boundary between the soil and the surrounding air and thus made it possible to improve the treatment effectively.

Conclusion

Following the reaching of target temperatures in the ground, the shutdown of the installation took place officially on Wednesday, March 19th. The reception of the works was done on Monday, March 24th through the RECOSOL research office. Site remediation control drilling has been completed to 6.5 m and test results for the 6 m- 6.5 m range are well below response standards and remediation standards.

mg/kg DM results	150>200cm drillings	600>650cm drillings
HTP (C10-C12)	<4.0	<4.0
HTP (C12-C20)	31	<15
HTP (C20-C30)	41	<15
HTP (C30-C40)	51	<16
HTP (C10-C40)	<16	<50

It should be noted that the treatment lasted 71 days instead of 42 days initially planned with 3 burners. The treatment via a single burner proved nevertheless very effective and allowed us to treat the soils according to the objectives defined by the expert in pollution on a radius of 1m to 1,5m.

From a financial point of view, we had an additional cost in terms of follow-up by our engineers and immobilization of our equipment, on the other hand, the fact of placing only one burner instead of the three initially planned, allowed us to balance our operating accounts.