

ESTD/ E-21-06 STRASBOURG (FR)

Context & Project Description

This project was carried out under licence in collaboration with the company OGD – Ortec from October 2019 and June 2021.

The contamination was due to the discharge of PAH, Hydrocarbons (C>12) and VOCl (TCE/PCE).

The soil came from various places along the canal (Citadelle Nord, Ouest and Sud, Starlette Nord and Sud). A thermal treatment platform was set up near the polluted soil, which was excavated and gradually brought to this platform.

Equipment

41 Natural Gas Smart Burners –
Reburn treatment (Vapor Treatment
with granulated activated carbon
from the seventh batch)

Heating tubes

- 41 Heating tubes and 14 Exchanger tubes (batch 1, 2, 5, 6 and 7)
- 35 Heating tubes and 12 Exchanger tubes (batch 3)
- 29 Heating tubes and 10 Exchanger tubes (batch 4)

Treatment targets

- 250°C at the cold points
- Batch 1 to 4: 640 mg/kg of Hydrocarbons (C10-C40) and 136 mg/kg of PAH
- From the 5 batch: 500 mg/kg of Hydrocarbons (C10-C40) and 50 mg/kg of PAH
- TCE/PCE: 5 mg/kg total VOCl

Heating duration

2 days (batch 1), 43 days (batch 2), 55 days (batch 3), 56 days (batch 4), 51 days (batch 5), 49 days (batch 6) and 50 days (batch 7).

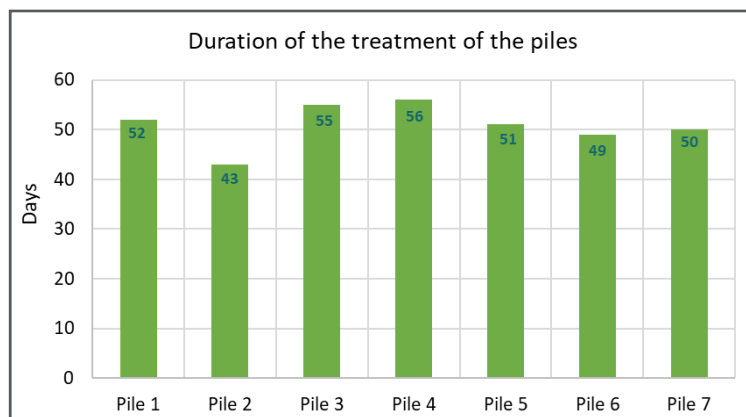


Figure 1: Duration of the treatment of the piles



Key words

Contaminants

PAH

C10-C40

TCE/PCE

Max. concentration

HAP: 1872 mg/kg DM

C10-C40: 3907 mg/kg DM

TCE: 975 mg/kg DM

PCE: 732 mg/kg DM

Volume

10.000 m³

Tonnage

18.720 t

Nb of heating tubes

105

Temperature Target

250°C

Project duration

356 days in total

Treatment targets

Batch 1 to 4:

HAP: 136 mg/kg

C10-C40: 640 mg/kg

TCE/PCE: < 5mg/kg

Batch 5 to 7:

HAP: 50 mg/kg C10-

C40: 500 mg/kg

Location

Strasbourg, France

Future Use

Residential

Client

SPL 2 Rives

Partner

OGD, Groupe Ortec

Date

2019-2021



Key words

Contaminants
PAH, C10-C40
TCE/PCE

Max. concentration

PAH: 1872 mg/kg DM
C10-C40: 3907 mg/kg DM

TCE: 975 mg/kg DM

PCE: 732 mg/kg DM

Volume
10.000 m³

Tonnage
18.720 T

Nb of heating tubes **105**

Temperature Target **250°C**

Project duration
356 days in total

Treatment targets

Batch 1 to 4:
HAP: 136 mg/kg
C10-C40: 640 mg/kg

TCE/PCE: < 5mg/kg

Batch 5 to 7:
HAP: 50 mg/kg
C10-C40: 500 mg/kg

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Strasbourg, France

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Residential

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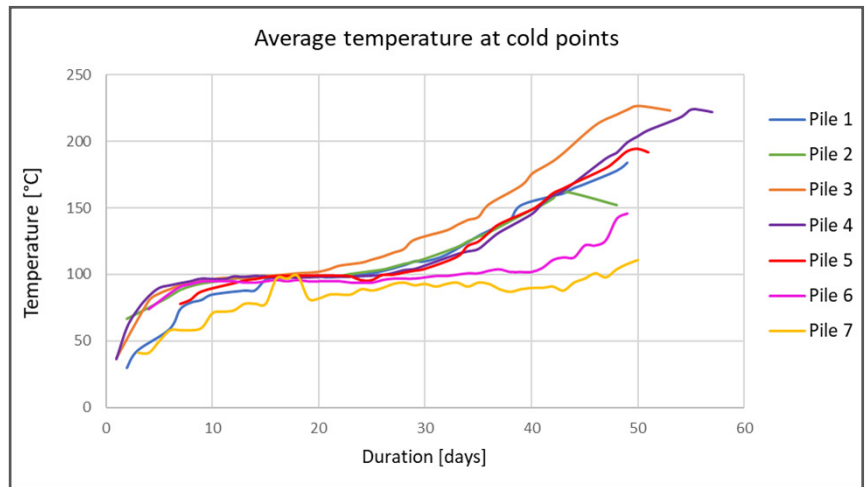


Figure 2: Average temperature at cold points

Monitoring

- 5 temperature probe wells in the Bottom (at depths 2.3 m, 7.1 m, and 11.9 m)
- 5 temperature probe wells in the Middle (at depths 2.3m, 6.35 m, and 10.4 m)
- 5 temperature probe wells in the Top (at depths 2.3m, 5.6 m, and 8.9 m)
- 5 pressure wells
- 1 Gaz analyser (CO, CO₂, O₂, T°, NO, NO_x, SO₂, C_xH_y and CH₄)

Planning

October 2019 to June 2021

Conclusion

The heat treatment of 10,000 m³ in 7 piles was a great success. The percentage of burner operation during the treatment of the 7 piles was of 97% on average. This project has become a reference in terms of heating control and energy consumption.