

# I-17-04

## WUWEI - SHANGHAI CHINA

### Context

The site is in QiLianShan Road 145, Shanghai, China in a 90 000m<sup>2</sup> field in the city. The location was once occupied by a dying company which spilled various contaminants in the ground.

The project is a **pilot test** on a 25m<sup>2</sup> at 14m depth (heating zone) with 11 gas burners (V3/V4), a vapor treatment unit and a liquid treatment unit.



1. Site location

### Project description

The treatment area is impacted with various solvent described in the table below.

COC (units)	Average	Maximum	Treatment Goal
	mg/kg	mg/kg	mg/kg
<b>Saturated Zone</b>			
Chlorobenzene	150	363	353
1,2-Dichlorobenzene	800	2160	1795
1,3-Dichlorobenzene	80	212	39,3
1,4-Dichlorobenzene	500	1400	29,4
Nitrobenzene	100	370	40
Aniline	200	781	5,75

2. Contaminants of Concern

### Construction of the watertight wall

In order to isolate the treatment zone from the ground water a wall was built in the ground around the treatment area. The wall is 1m thick and 14m deep.

During the treatment the results showed that at the outskirts of the heating zone, the concentrations were well above the objective. However, inside the heating area, the values were well beneath the target concentrations. One of the hypothesis to explain this difference is that the wall which retain the water is too porous or cracked which resupplies the treatment zone with water and contaminants.

### Monitoring

The soil temperature is measured at 6 various locations and at different depths on the site: 4 of them are measured along the secondary vapor tubes and 2 other ones in cold points. All measuring is done in thermocouple tubes.

## Key facts

### Contaminants

Chlorobenzène  
1-2 DiChlorobenzène  
1-3 DiChlorobenzène  
1-4 DiChlorobenzène  
Nitrobenzène  
Aniline

### Max. Concentration

5286 mg/kg DM

### Volume

340 m<sup>3</sup>

### Tonnage

609 tons

### Heating elements

11 (L: 14 m)

### Temperature target

150°C

### Heating duration

35 days

### Treatment objectives

<100 mg/kg DM

### Area

Shanghai - China

### Future use

Industrial site

### Client

GREENMENT

### Consultant

GREENMENT

### Date

2017



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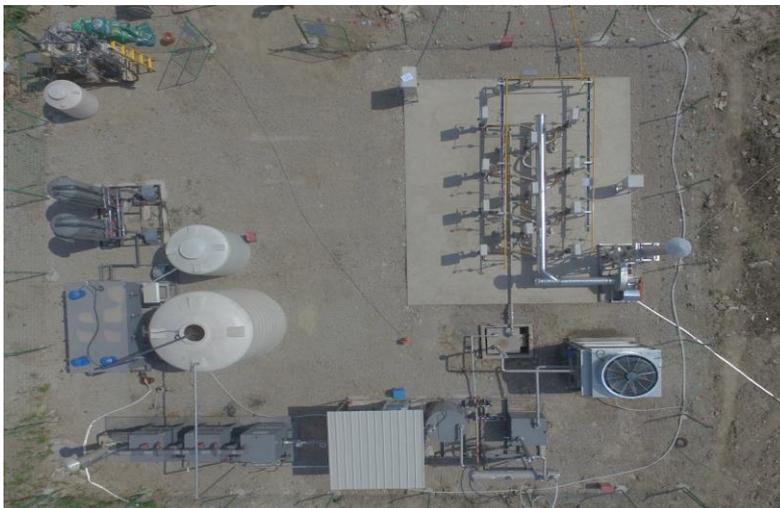
## Consultant

GREENMENT

## Date

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## Polluted zone



3. Site layout

## Analysis results

The following table summarize the concentrations of each contaminant of concern in the two sampling points.

Contaminant concentration in the soil (mg/kg)								
Contaminants	Target	Depth (m)						
		2	4	6	8	10	12	14
Chlorobenzene	353	0.16	<0.05	0.13	0.05	0.13	<0.05	<0.05
1.2-Dichlorobenzene	1795	2.09	<0.10	<0.10	<0.10	0.36	<0.10	<0.10
1.3-Dichlorobenzene	39,3	0.16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1.4-Dichlorobenzene	29,4	1.23	<0.10	<0.10	<0.10	0.27	<0.10	<0.10
Nitrobenzene	40	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Aniline	5,75	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10

4. The results of the soil analysis (Sample 11/07/2017)

## Planning:

- Installation: 2 weeks
- Treatment: 8 weeks
- Analyses & reports: 1 week
- Demobilization: 2 weeks

## Conclusions:

Wuwei project has been a challenging project due to:

- The first project in China
- A new partner: shared preparation and work in an intercultural context
- New technics and methods
- Contaminants and concentrations which caused corrosion issues
- The use of water retaining walls without water pumping during the treatment

The project ends as a success (targets completed): temperatures were not able to go above 100°C in most of the monitoring points but the stripping process decontaminated the soil. The blower from the vapor treatment unit was not appropriate for the project but the vapors were well condensed and treated.