

**TOGETHER WE
MAKE TOMORROW
MORE BEAUTIFUL**



Soil remediation of (former) dry cleaners in Flanders: VLABOTEX npo

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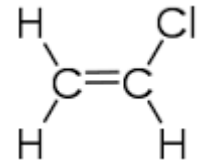
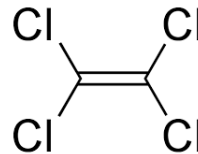
OVAM (Public Waste Agency of Flanders)

OVAM is the Flemish authority responsible for:

- waste management
- soil management
- durable management of materials

Soil remediation of dry cleaners - Problem

- Dry cleaners uses solvents in cleaning process
 - Past: naphta, white spirit
 - Now: > 95 % tetrachloroethene (PCE or PER)
- Soil- and groundwatercontamination with PCE and it degradation products
 - Tetrachloroethene (PCE)
 - Trichloroethene (TCE)
 - Dichloroethene (DCE)
 - Vinylchloride (VC)



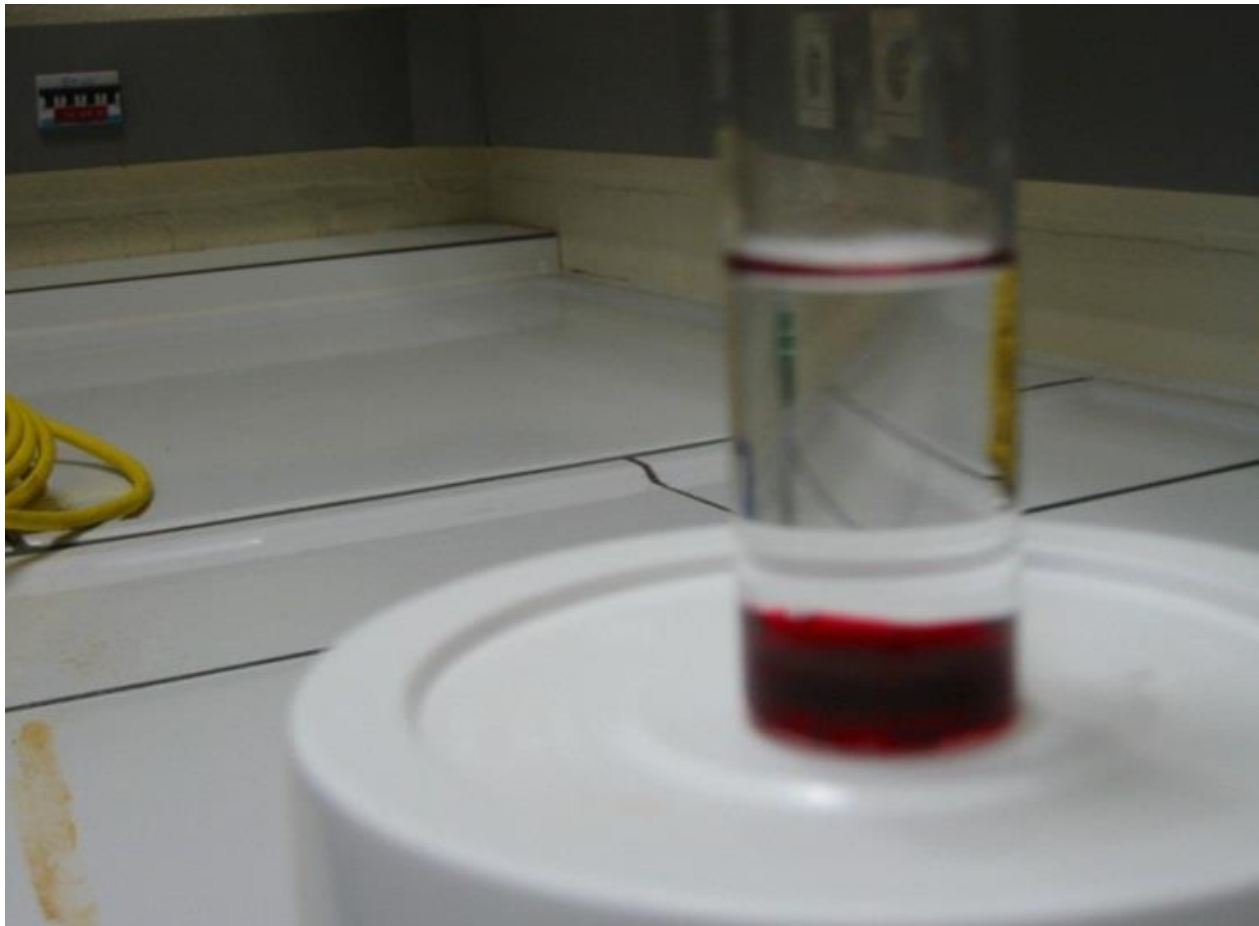
Soil remediation of dry cleaners - Problem

- Contamination caused (mostly in the past) by:
 - spills with PCE and PCE containing waste (sludge)
 - overfilling of the dry cleaning system
 - Distillator overflow
 - leakage of the sewer system (contact water) !!

Soil remediation of dry cleaners - Problem

- Chlorinated solvent: specific properties
 - Dense non aqueous phase (DNAPL)
 - Immiscible-liquid phase
 - Dense than water

Soil remediation of dry cleaners - Problem



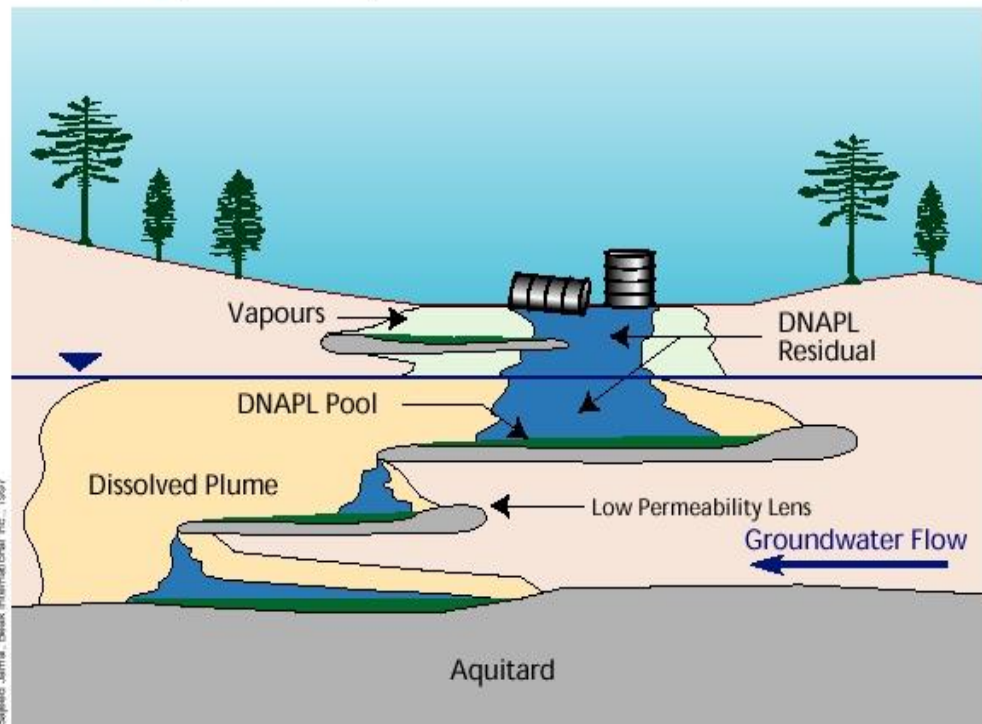
Soil remediation of dry cleaners - Problem

- Chlorinated solvent: specific properties
 - Dense non aqueous phase (DNAPL)
 - Immiscible-liquid phase
 - Dense than water
 - Volatile (path-way inhalation)
 - Toxic (carcinogenic?)
 - Low solubility

Soil remediation of dry cleaners - Problem

complex
distribution pattern !

Dense Non-Aqueous Phase Liquids (DNAPLs)



Soil remediation of dry cleaners - Problem

- Dry cleaners are
 - Small companies in urban area

Soil remediation of dry cleaners - Problem



Soil remediation of dry cleaners - Problem

- Dry cleaners are
 - Small companies in urban area
 - Complete filled up with equipment, laundry,...

Soil remediation of dry cleaners - Problem



**LOCATION
FIELDWORK ??**

Soil remediation of dry cleaners - Problem

- Dry cleaners are
 - Small companies in urban area
 - Complete filled up with equipment, laundry,...
 - Presence of other buildings
 - Proximity of residents/receptors
- Poor financial capacity of the dry cleaners, the cost of the soil remediation often exceeds :
 - financial strength of the company/owner
 - Value of the property

⇒ soil remediation difficult and expensive
abandoned sites (black- or brownfields)

Solution : a soil remediation organisation

- years of negotiations (2003-2007) between OVAM and the professional federation (FBT)
- Principles
 - The 'polluter pays' principle
 - Limited financial strengths of the individual applicant has to be taken into account
 - Defined (**FIXED**) contribution with subsidy of the Flemish Government (50 %)

VLABOTEX npo

- On September 14, 2007 the Flemish government recognized VLABOTEX npo as a 'soil remediation organization' for the dry cleaning sector in Flanders



Investigation and remediation by VLABOTEX

- Lessons learned from previous investigations and remediations (< 2008)
 - Bulk of contamination in core zone
 - In het past: too much focus on groundwater (plume zone)
 - Formulation of conceptual site model: not evident
- Limited financial resources
- Need of a cost efficient approach

A specific guideline (code of good practice) for
VLABOTEX

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