



KRÜGER

Sustainability using thermal remediation?

Vår møte

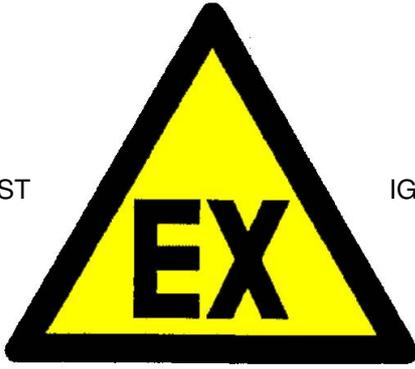
23-03-2010

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Interdependence **KRÜGER**

GAS/DUST

IGNITION



AIR/OXYGEN

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Three important steps

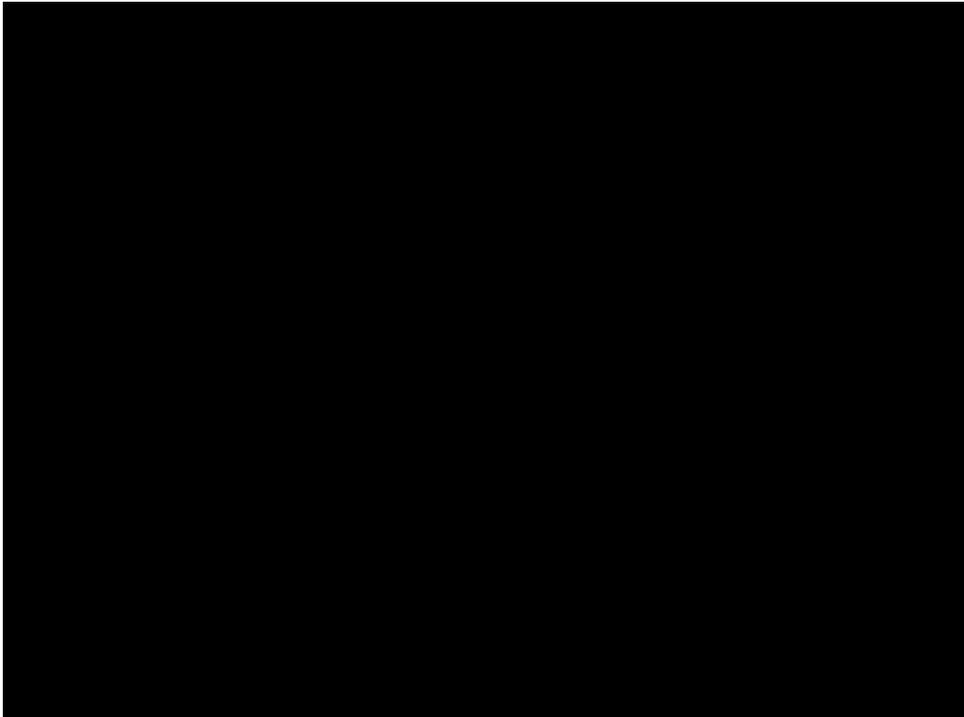
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Conceptual model

Risk assesment

**Sustainability
evaluation**

Technology evaluation



Reerslev – site description

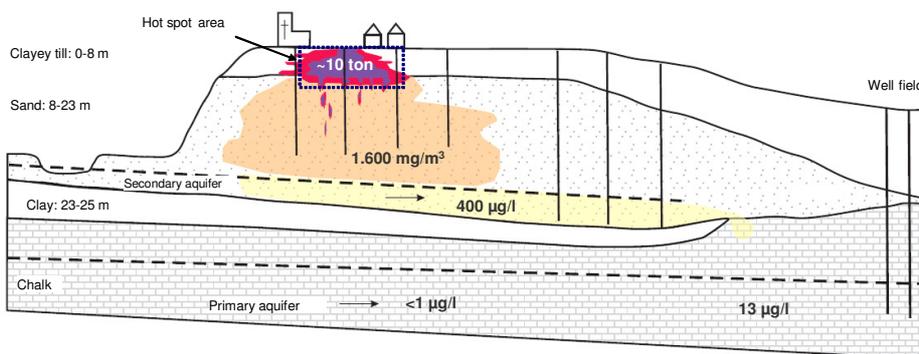
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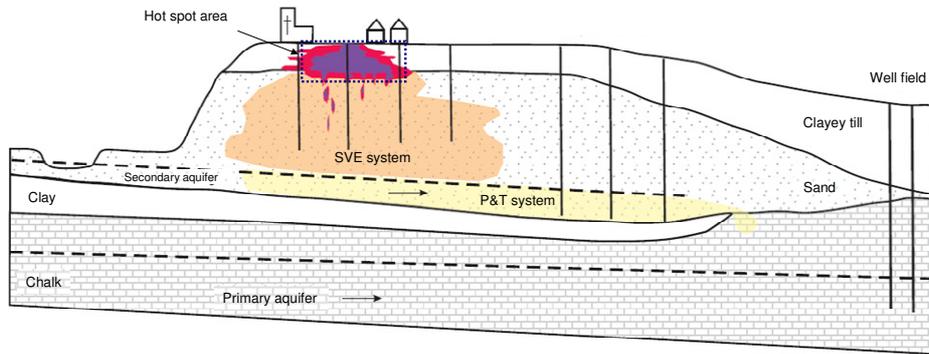
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Reerslev, Denmark

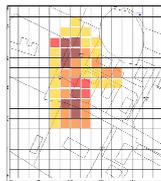
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NIRAS Modelling objectives – size of area to be treated using
ISTD and flux-reduction to be achieved



Concentration (mg-PCE/kg)	Area (m ²)	Flux (kg/y)
25	900	32,4
10	400	1,6
1	1500	0,5
0,1	2100	0,1

34,6 kg/y is the current flux of PCE into the vadose zone underlying the source area

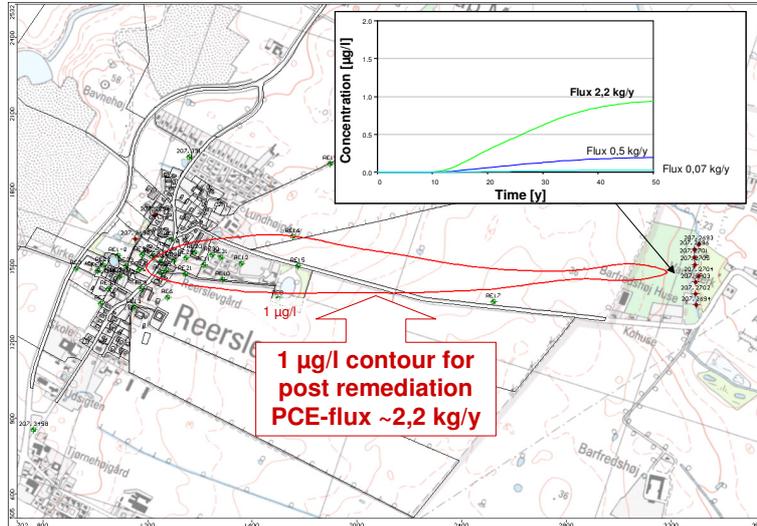
Remediation scenarios considered:

- Reduction to **10 mg/kg** (900 m²) → Flux 2,2 kg/y
- Reduction to **1 mg/kg** (1300 m²) → Flux 1,2 kg/y
- Reduction to **0,1 mg/kg** (1300 m²) → Flux 0,7 kg/y
- Reduction to **0,1 mg/kg** (2800 m²) → Flux 0,2 kg/y (original design)
- Reduction to **0,1 mg/kg** (6000 m²) → Flux 0,07 kg/y (complete remediation)

Scenario should achieve < 1 µg-PCE /l at well field



Primary aquifer – Predicted PCE breakthrough curves at the well field for 3 different flux reduction scenarios



→ Original design: 0,1 mg/kg within 2830 m² (Flux 0,2 kg-PCE/y)

→ Revised design: 1 mg/kg within 1320 m² (Flux 2,2 kg-PCE/y)

Technology evaluation

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- ▶ Excavation and off site treatment
- ▶ In Situ Thermal Desorption (ISTD)
- ▶ Cutting off hotspot by SVE



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