Vingstedcentret, March 8, 2010

Chemical oxidation as remediation technology

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Introduction

- Chemical oxidation have been used in Denmark for about 10 years
  - Mostly permanganate which have some limitations regarding geology and compounds
- Many other oxidation agents exist
  - More aggressive and can oxidize more compounds
- In the U.S. they have a lot of experience with other oxidation agents

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Purpose with the ISCO day

- Get an up-date on the newest knowledge regarding chemical oxidation as a remediation technology under both Danish and foreign conditions
  - Dimensioning
  - Consumption of oxidants
  - Activation methods
  - Implementation

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In-put from the U.S.

- Very strong program
- Presentations from three experts from USA – both from an university and from ISCO vendors with great experience in performing chemical oxidation at polluted sites
- Will talk about theoretical and practical experience with ISCO and new trends in the field of chemical oxidation

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American units

- 1 $ = 5,49 kr.
- 1 lb = 0,45 kg
- 1 inch = 2,5 cm
- 1 feet = 30 cm
- 1 feet^2 = 0,1 m^2
- 1 gallon = 3,8 l
- 1 psi = 6900 Pa = 0,07 bar

And

- ISCO = in situ chemical oxidation

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Program morning

- ISCO overview – comparison of oxidants and activation methods by Prasad Kakarla
- ISCO under Danish conditions by Torben Jørgensen
- Persulfate ISCO by Katarina Tsitonaki
- Knowledge on $KMnO_4$ under DK conditions by Jarl Dall-Jepsen
- Results from laboratory test with chemical oxidation in Kærgård Plantage by Lars Bennedsen

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Program afternoon

- Lessons learned from ISCO applications by Michelle Crimi
- Delivery mechanisms and injection strategies by Prasad Kakarla
- Treatment of NAPL with S-ISCO by George Hoag
- Results from laboratory and pilot tests with S-ISCO by Lotte Rasmussen
- Discussion

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Discussion

- ISCO and remediation of residual free phase
- Changes in pH as a consequence of ISCO
- How large part of the pore volume should be replaced by oxidant and which concentration of oxidant should be used?
- ISCO perspectives and trends

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