



CityChlor action plan

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OVAM



Overview

- What did we do so far ?
- What will we do ?
 - Actions
 - Pilot projects
- What is next ?

What did we do in 2010 ?

- Regional workshops
- Project reviews
- Inventory

- Actions outlined
- Investments defined

WP 2 – characterization tools

- Groundwater characterization
 - Passive samplers
 - Direct Push Technology
 - Long-term monitoring
- Soil characterization
 - Sampling of volatile components
 - Soil air sampling

WP 2 – characterization tools

- Indoor air characterization
 - Indoor air sampling
 - Models for the transfer soil - indoor air
 - Attenuation in the unsaturated soil
- Risk assessment
 - Risk models
- Integrated site characterization
 - Integral groundwater characterization

WP 3 – remediation tools

- Source remediation
 - Injection of iron
 - Bio washing: ATES and remediation
 - ISCO
 - Thermal treatment
- Plume remediation
 - MNA on large scale
- Integrated site remediation

WP 4 – socio-economic aspects

- Economical aspects
 - Alternative financing
 - Land value and remediation
 - Area-oriented approach: costs and benefits
- Legal aspects
 - Risk management and liabilities
 - Bottlenecks in the area-oriented approach

WP 4 – socio-economic aspects

- Risk perception and community involvement
- Integration of remediation in urban development

Pilot projects

- Goal: implementation of new techniques
 - Demonstration and validation
 - Including in guidelines
- 7 pilot projects over the 4 regions
 - Local coordination
 - Follow-up by international team

Pilot projects

- Injection of iron for source treatment (FI)
- Detection and characterization of source (FI)
- Communication and risk perception (FI)
- Site investigation techniques (Fr)
- Source treatment (Ge)
- ATES and remediation (NI)
- Bio-process monitoring (NI)

Injection of iron

- Degradation of VOCl is a slow and difficult process
- Reductive dechlorination by zerovalent iron
- Direct injection of iron particles

Injection of iron

- Pilot site in Herk-de-Stad (FI)



- Call for candidates launched July 2010
- Candidates selected and call for offers Nov 2010

Detection and characterization

- “Classic” techniques have their limitations
- Importance of correct description
- New methods exist but implementation is difficult

Detection and characterization

- Pilot site in Kortrijk (FI)



- Call for offers June 2010
- Selection of 2 offers Nov 2010

Communication + risk perception

- Socio-psychological evaluation of the impact of communication during remediation projects
- Development of aids for communication
- Implemented on 2 remediation projects (FI)
 - Mortsel (shopping street)
 - Ghent (residential area)
- Call for offers August 2010
 - Assigned to the University of Ghent, Department of Sociology

Site investigation techniques

- Different pathways for exposure
- Complete characterization: different techniques
- Successive use of techniques:
 - DPT
 - Passive samplers groundwater
 - Soil sampling
 - Soil air and indoor air sampling

Site investigation techniques

- Pilot site Ile de France (Fr)



- Carried out by INERIS

Source treatment

- Typical pattern of small source and large plume
- Remediation:
 - Active approach of source
 - More passive approach / control of plume
- Evaluation of 3 methods:
 - Venting with steam injection
 - Venting with soil heating
 - Removal by overlapping drillings

Source treatment

- Pilot site in Stuttgart (Ge)



- Evaluation assigned to Arcadis

ATES and remediation

- Aquifer Thermal Energy Storage
- Circulation and temperature rise
- “Biogas machine”

Bio-process monitoring

- Isotope analysis
- Passive samplers groundwater
- Direct sensors for pollution

ATES and remediation

- Pilot site in Utrecht (NI)



- ATES: gradually installed
- Bio-process monitoring: defined spring 2011

What is next ?

- Action plan
 - Topic-specific working groups
 - Invitations to parties concerned/interested
- Pilot projects
 - Calls for tenders
- Progress: website and newsletter

Questions ?

