CITYCHLOR – an european integrated approach for the tackling of soil and groundwater pollution with chlorinated solvents in urban environments

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Chlorinated solvents are amongst the most common soil and groundwater contaminants due to their widespread use as solvents and degreasing agents. Due to their physicochemical properties they produce large scale plumes of pollution in the groundwater. Pollution by chlorinated solvents is in many cases caused by small-scale activities as dry-cleaners, garages and metal-using industry, that generated multiple contaminant sources for widespread groundwater pollution in urban areas. In the densely populated Northwest Europe, these pollution plumes are often situated under residential and urban development areas and therefore difficultly accessible.

Remediation of this type of pollution is a slow and difficult process that is cost-intensive and exceeds in many cases the financial capacities of the polluter. Moreover, the polluters are not always traceable or can sometimes not be held liable due to the overlap of pollution plumes. These pollutions also have a socio-economic impact for the parties involved and their environment. Indirectly, pollution hampers redevelopment of urban areas and it affects the quality of life due to uncertainty and the often slow process of investigation and remediation.

Extensive research is allready done to possible technical solutions, but the urban enviroment requires a more specific approach. There is a need for an integrated approach of this type of pollution. This is why 9 partners spread over Flanders, the Netherlands, France and Germany joined hands in the CityChlor project. CityChlor stands for 'taCkling urban soIl and groundwater conTamination caused bY CHLORinated solvents'. CityChlor will not only bring together technical knowledge, but will elaborate directives on how should be coped with organizational and socio-economic aspects and community involvement. This has to lead to a more efficient and faster tackling of this often-occuring type of pollution.

The realization of the project is in the hands of a partnership between authorities, research institutes and cities. Next to these partners, professional federations, experts and remediation funds are involved in the project. The total research budget amounts to 5,2 M€ of which 50% is financed by the INTERREG IV B programma for Northwest Europe. The project started end 2009 and will run for 3,5 years.

The aim of the project is to improve the quality and minimise pollution of soil and groundwater by developing an integrated approach to tackle the threats caused by contamination with chlorinated solvents in urban areas. CityChlor will work on these topics:

- Technological innovation and transfer of know-how towards implementation on site characterization and remediation of soil and groundwater pollution. Integration

of innovations in routine procedures will be facilitated by demonstration sites, technology verification, uptake in codes of best practice and workshops.

Within CityChlor, Ineris co-ordinates the studies and tests on innovative characterization tools. Groundwater, soil but also indoor air characterization are part of the CityChlor action plan. These tests and best practices for monitoring and characterization technologies support the Water Framework Directive/Groundwater Directive.

In the French CityChlor pilot several techniques are being tested and described. The strenghts and weaknesses of each technique will be part of a technical guide as well as tips and tricks to apply those techniques.

- Integrated groundwater risk management approaches and their implementation at urban level. Such approaches, recently developed and applied at pilot scale in Germany and the Netherlands will be further developed, described and demonstrated as best practise.

- Cost-benefit of integrated approaches and alternative financing mechanisms. Abatement of pollution has a strong economic dimension. Besides the political consensus on the “polluter pays principle”, public driven and pre-financed integral approaches considering larger areas and pollution clusters appear to be more appropriate solutions from a technical and administrative perspective. A thorough analysis of the pros and cons will help to optimise the methodologies to be applied.

- Risk communication and community involvement. Long-term remediation or natural attenuation approaches in densely populated areas require public acceptance. Concepts to create a realistic perception of risks and to establish risk communication with stakeholders are developed.