MAGIC

MAnagement of Groundwater at Industrially Contaminated areas

Supporting sustainable spatial development by the abatement of groundwater damages MAGIC contributes to implemention of "European Spatial Dev. Perspective and the "CEMAT Guiding Principles". Basic idea of MAGIC is to develop guidance for general application of integral groundwater management concept that contributes to rehabilitation of large derelict, polluted areas and protection of endangered water resources.
Project partner within the framework of Central, Adriatic, Danubian and South-Eastern European Space (CADSES) programme.
A project of EU Community Initiative INTERREG III B (2005 - 2008)

Introduction

The MAGIC project is designed to promote sustainable spatial development by the abatement of large groundwater damage in areas of CADSES region by applying, improvement and dissemination of the innovative, integral, emission-orientated management approach which was developed in the FP5 RTD project INCORE.

The main objectives in long-term plan

- Elaboration, implementation and dissemination of a hierarchic procedure of groundwater management of a large contaminated areas,
- Elaboration, implementation and specification of a proper tools of investigation, evaluation and advancement of groundwater contamination,
- Application of management procedures and tools in the CADSES region.

Concrete results

- The implementation of the innovative concept in 4 pilot project areas
- The elaboration of the guidance for practical application of the MAGIC concept
- The trans-national exchange of experience and dissemination.

project website:

www.magic-cadses.com

Work-packages

The project is structured into 6 work-packages:

WP1 Basic information and planning
Collecting data of groundwater situation, configuration of a GIS database and a conceptual groundwater model. Design of field studies strategy.

WP2 Field and laboratory investigation
Geophysical investigation, testing of monitoring wells, short pumping tests, integral pumping tests, sampling campaigns, and related laboratory work

WP3 Groundwater Modelling
Developing of a standardised software tool for numerical interpretation of integral pumping tests. Modelling groundwater flow and contaminant transport.

WP4 Evaluation of investigation results
Assessment and evaluation of investigation results, identification of the largest sources of pollution in the areas concerned, and health risk assessment according to scenarios for current and future use.

WP5 Sharing best practice in administrative procedures
Sharing and description of best practice, set-up of recommendations for technical work action related to integral groundwater investigation.

WP6 Management, co-ordination & dissemination of results
Results implementation into the daily work of local administration and the results dissemination in CADSES - Internal project conferences and workshops, seminars for dissemination and training.

Project Partners

Central Mining Institute (GIG), Poland
GIG in Katowice (Poland) founded in 1945, is a governmental scientific-research unit engaged in problems of mining engineering, safety in mines and environmental protection in the hard coal mining sector.
GIG is Leader Partner of the MAGIC Project.
www.gig.katowice.pl

Institute for Ecology of Industrial Areas (IETU), Poland
Established in 1972, IETU is a research and development unit acting under the Polish Ministry of Environment. IETU research activities include areas such as: environmental policy and management, risk assessment, land management, surface and groundwater protection.
www.ietu.katowice.pl

Capital City of Stuttgart Department for Environmental Protection, Germany
Founded in 1988, the Department for Environmental Protection is responsible for the co-ordination of environmental planning and protection in the city of Stuttgart, especially control of water, air, soil, waste and energy consumption and nature and climate protection.
www.stuttgart.de

Institute of Public Health (IPH) Ostrava, CZ
IPH is a health care institute established by the Ministry of Health CZ which provides services in the field of health promotion and protection. The main activities of IPH comprise determination and measurement of various components of living and working environment, examination of general consumption articles and food characteristics and wide range of investigations in biological and clinical material.
www.zuova.cz

Polish Geological Institute (PGI), Poland
PGI is the largest scientific and research geological institution of Poland founded in 1919, that manages multi-disciplinary scientific research on the geological structure of Poland in order to use the knowledge for purposes of domestic economy and environmental protection.
www.pgi.waw.pl

Municipality of Olsztyn, Poland
This partner represents Polish self-governmental local authorities relevant for environmental resources management at one of MAGIC project areas. It has the wide experience in EU projects. Its essential role is to participate in best-practice know-how exchange for newly accessed EU countries in the field of polluted groundwater resources management at industrially damaged areas.
www.um.olsztyn.pl

Investigation Area
Trachy

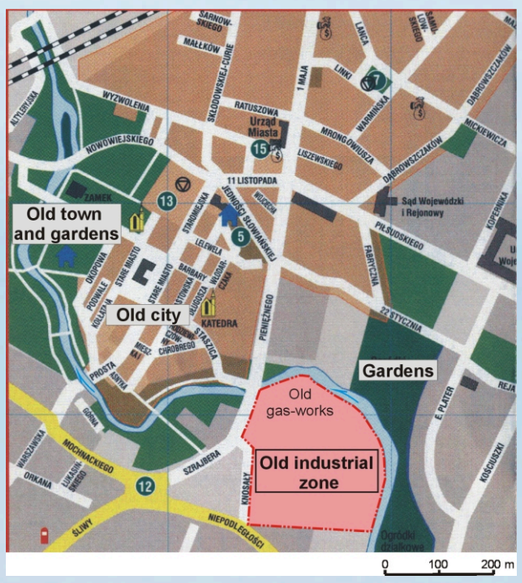
Landfill area Trachy (Upper Silesia, Poland) consists of three landfills: one huge coal mining waste dump and two small ones, for galvanic waste and municipal waste. Those landfills are causing significant groundwater pollution of Usable Groundwater Aquifer (UGWA)„Górna Odra".
The main pollutants are:
Ni, Pb, Cd (of unclear origin, temporary exceeding limits)
SO_4, Cl, Fe, Mn (caused probably by mining waste landfill, severe pollution)

The main contamination plume is suspected to be heading towards Trachy village.

This pilot project is expected to work out a concept for landfill rehabilitation aiming at abatement of groundwater pollution of Usable Groundwater Aquifer (UGWA).

Investigation Area
Olsztyn

More than 100 years old gasworks is located in city centre of Olsztyn close to the historical part of town at the river Łyna. 10 years ago, the City took over devastated brownfield area. Leaks of gas pitch from the old containers were recorded. Dangerous organic compounds are discharging from the area to the surface and groundwater. It restrains investment possibilities in the centre of Olsztyn and decreases tourists' attractiveness.



Complicated post-glacial geological structure affects the hydro geological system and only the detailed hydro geological model can estimate the level of contamination hazard of groundwater intakes. Scheduled investigation of immission pumping test will allow revealing unknown pollution sources within post-industrial area in the river valley.

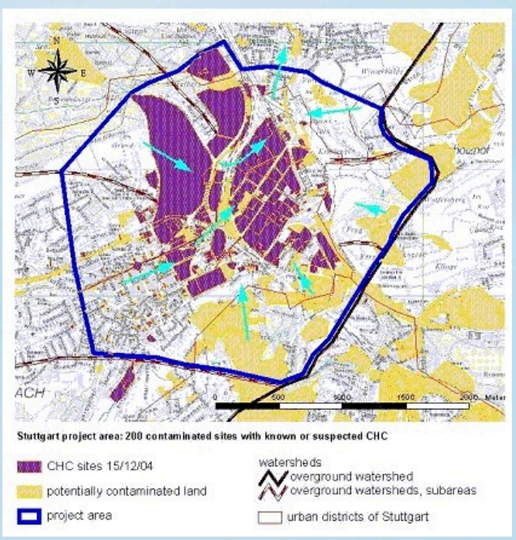
Investigation Area
Ostrava

Ostrava is the administrative and industrial centre of the North Moravia region. The project area - Chemical part of coking plant Vitkovice - is situated in city centre of Ostrava. An extent of massive contamination with free phase substances DNAPL (originated in black coal tar) in gravel of Ostravice river valley terrace have been verified and places with their biggest accumulation have been defined in the area of coke-chemistry surface.

On the basis of a data collection and additional field studies a hydro geological and numerical model in the project area will be compiled to characterise the groundwater situation and to identify the most serious polluters, their transport paths and to support remediation activities in the site.

Investigation Area
Stuttgart

Stuttgart, State Capital of Baden-Wuerttemberg, is the centre of a densely populated region in southwestern Germany.The districts in the north of Stuttgart- the project area "Feuerbacher Tal" thereunder - is handicapped by serious soil and groundwater contamination generated over decades. 300 contaminated sites are within the project area. More than 200 are known or suspected to discharge CHC in the aquifer.



On the basis of a data collection and additional field studies a hydro geological and numerical model will be compiled to characterise the groundwater situation in the industrial area of Feuerbach and to identify the most serious polluters within this area.