

Conference Reports

First International Conference on Bioremediation of Soil and Groundwater

Cracow, Poland, September 5th to 8th, 2004

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Bioremediation is one of the popular new technologies, which enters the scientific and partly economical field of cleaning our environment in remarkably fast steps. First developed and introduced mainly by the US in the beginning of the 90ies, it entered Europe at the end of the nineties (for example by running an EU COST Action 837), and has now been taking foot across the globe during the beginning of the new century. In Poland one of the leading institutes in the field of environmental biotechnology, the Environmental Biotechnology Department (EBD) of the Silesian University of Technology at Gliwice, headed by Prof. Dr. Korneliusz Miksch, created a Centre of Excellence for Biotechnology Research in 2002 within the EU Fifth Framework Programme (DEMETER: <http://kbs.ise.polsl.pl>). With the main aim to enlarge the wide contacts on bioremediation techniques and to strengthen the international cooperation throughout and within Europe, Prof. Miksch and his working team organised the First International Conference on the Bioremediation of Soil and Groundwater from Sept. 5th to 8th 2004 in Cracow. The Conference was held under the auspices of the European Federation of Biotechnology (Section of Environmental Biotechnology) and the Biotechnology Committee of the Polish Academy of Sciences.

Around 100 scientists from 23 countries (17 European and 6 non-European) presented an excellent mixture of hot topics on 'bioremediation'. The conference started with two sessions of monitoring and biomonitoring techniques for controlling environmental pollution by bioindicators, biotests and biomarkers, followed by 3 sessions on the phytoremediation of metals and biodegradation of organic pollutants in soils, sediments and groundwater, and one session dealing with enhanced remediation techniques. Microbiologically active species and fungi play major roles in the degradation of polluting chemicals. During discussions and two independent poster sessions, it could be clearly stated that physical, chemical and genetic manipulation and/or stimulation of the ex- and internal media can strongly increase the effectivity of the overall remediation process. Of course, the economic benefit will finally decide whether these new technologies will be successfully added to the overall portfolio of classical tools and methods for cleaning the soil (sediment) and (ground- and waste-)water. During the conference, it was clearly stated that, in comparison to the classical methods for cleaning polluted media, the benefits of bioremediation methods are not yet very well accepted by users and applicators technologically. Especially the industrial market is strongly linked to methods for which the remediation success is more guaranteed by cost/benefit calculations of used money and time. Especially the cleaning success of bioremediation techniques in large areas and involving higher volumes polluted by chemicals must be more frequently demonstrated practically on experimental sites dealing online with bioremediation 'in action'. In addition, the dialogue in between academic researchers and industrial CEOs must be intensified. Here, common projects, e.g. by teaching and research on the graduate and postgraduate student levels for a collection of common information, can close lacks of communication in this highly innovative field of ecological engineering. A well considered mix of ecotoxicological risk assessment and biotechnological remediation action plans for polluted soils and wastewater can bring the ecological advantages of these techniques more into the frontline of objective discussion. A strong financial

research support by international organisations such as the EU and national agencies would be highly necessary to introduce these biotechniques further on successfully into industry and society.

This first 'International Conference on Bioremediation of Soil and Groundwater' in Cracow was an excellent starting point for necessary follow ups, especially for the new eastern members of the EU. The organisers plan to publish selected papers in an international scientific journal. The next (and hopefully soon!!!) workshops and conferences should possibly involve more direct users of these techniques, for instance decision makers of the industry and public institutions. And possibly more students of different educational levels should be invited by the organisers so that we can learn from each other for starting new exciting projects and sharing our experiences, not only scientifically.

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Problems to be solved. Environmental Biotechnology Department EBD is one of the leading Polish research centres in the field of environmental biotechnology with wide contacts in whole Europe with research centres involved in environmental engineering. However, above mentioned contacts should be improved and still developed. It will support in enlargement of environmental biotechnology R&D potential of the Centre with new co-treatment techniques, improving of analytical skills, accessing to unique research infrastructure, participation in common projects, visits and stays for young researchers. Carrying out work connected with this project will help to adjust of the Centre potential to the economic and social needs of our region of Upper Silesia, our country Poland and whole European Community.

Scientific objective and approach. The scientific objectives and approach can be summarized as follows: establishing of twinning mechanisms with two outstanding European centres in the field of environmental biotechnology, development and improvement of the links with Eastern and Western Europe centres, attracting of young researchers by organising PhD students exchange, establishing a platform in the field of groundwater and soil bioremediation and ecotoxicology for specialists by establishing of conference and workshop, improving of the links with regional institutions by organising of meetings with administrative officers and regional government, top managers of Water and Wastewater Management Companies (WWMC) and specialists from national research centres, widening of the capacity of the Centre by opening of the post-graduate studies in the field of ecotoxicology, support for economical and social development of the Region by organising trainings, increasing participation in FP6 and promotion and dissemination of the Centre activities.

Expected impacts. The following benefits can be gained by the project accomplishment: stays for PhD students and young researchers in leading EU centres in the field of environmental engineering, participation in common projects, improving of the analytical skills, preparation of the curriculum of ecotoxicology post-graduate studies and its performing, international conference 'Soil and Groundwater Bioremediation' and international workshop in the field of ecotoxicology, trainings and courses for administrative staff and low and high level employees of Water and Wastewater Management Company, publication of brochures and leaflets on centre activities. Every workpackage of project will be concluded by options for next activities of the Centre.