

A.NATIONAL research contracts

1.BIOMEG

Title: *Bioaccumulation of heavy metals in soil-vegetable-human chain BIOMEG*

Coordinator of consortium: *Associate prof.dr. Camelia Varga*- Chemistry-Biology Department
North University of Baia Mare, vargacamelia@yahoo.com

Time range: 2008-2011

Funding source: CNMP - PNCD 2

Partners: North University of Baia Mare, Oradea University, Agricultural Research Center Livada Satu

Abstract: BIOMEG is an interdisciplinary applicative research project whose overarching goal is to shed light on the complex correlations that get established from agricultural soil contaminated with heavy metals and the mechanisms by which they accumulate in vegetables. The project will focus on means and ways to decline the contamination with heavy metals of soil and the impact of heavy metals on the health condition and the learning capacity of children. The outcomes of this research project will be disseminated to the relevant stakeholders, and an array of activities to build awareness and improve the training of the human factor will follow.

2.RIVAM

Title: *Rehabilitation of tailing ponds by applying of amendaments and cultivation of vegetal species with high adaptability to heavy metals - RIVAM*

Coordinator of consortium: *Lecturer dr. eng. Leonard Mihaly Cozmuta* - Chemistry-Biology Department
North University of Baia Mare, mihalyl@yahoo.com

Time range: 2008-2011

Funding source: CNMP - PNCD 2

Partners: North University of Baia Mare, Oradea University, Agricultural Research Center Livada Satu

Abstract: RIVAM is an interdisciplinary applicative research project that aims to establish by which method the ecologic rehabilitation of the tailing pond in Bozanta, a heritage of the non – ferrous mining activities in Maramures, could take place in efficient ways. The rehabilitation relies on the use of zeolites as amendaments ; the research will also focus on the identification of vegetal species that can best adapt to the physical – chemical – biological particular circumstances of the pond under scrutiny. Sharing the outcomes of the research work and supporting training activities to the benefit of other future potential stakeholders in the same field (well – versed research or young research staff) will be also integral part to this project.

3.CISPPA

Title: *Interdisciplinary research regarding the correlation soil-plant, establishing of transfer factors for areas with historic antropic pollution*

Coordinator of consortium: *Associate prof.dr. Gabriela Oprea* - Chemistry-Biology Department
North University of Baia Mare, opreag@yahoo.com

Time range: 2008-2011

Funding source: CNMP - PNCD 2

Partners: North University of Baia Mare, INCDO-INOE 2000- Cluj Napoca, Public health Institute Cluj Napoca, Agricultural and Veterinary Sciences University of Cluj Napoca, Agricultural and Veterinary Sciences University of Timisoara

Abstract:The project entails complex studies in terms of soil pollution and in terms of correlations that appear along the trophic chain, from plants up to humans, in various areas in Romania, including Baia Mare, a place reputed for being confronted with past and current pollution and with its consequences. The CISPPA project aims also to determine a series of transfer factors among soil and plants cultivated on it, based on the analysis of micro-elements residing in soil and that can be traced in plants afterwards. The evaluation of risk factors to which consumers are exposed because of the concentration of polluting factors established will be also part of the project, followed by the determination of the real degree of pollution in soil depending on the bio – disponibility of elements it contains. The CISPPA project shall provide answers to issues related to the mobility of microelements with toxic potential in soil, their

transfer in plants and further on along the trophic chain, as it will propose methods to evaluate the soil – plant transfer factors to be established. By establishing the active degree of pollution in soil depending on the transfer factors that will be computed, the distribution of micro – elements between soil and the plants growing on it will be quantified. The quantity of microelements that plants take from soil defines in a better way the degree of pollution than their effective concentration in the soil considered. Little research is available in this respect, but the fact that in the “acquis communautaire” there is no regulatory provision as regards a maximum threshold for chemical components in soil reflects its significance.

4.AMSREI <http://amsrei.ubm.ro/>

Title: *Monitoring of soil microbiota action as it utilization in ecological rehabilitation of tailing ponds*

Coordinator of consortium: *Lecturer dr. Monica Marian* - Chemistry-Biology Department
North University of Baia Mare, nitella_ro@yahoo.com

Time range: 2007-2010

Funding source: CNMP - PNCD 2

Partners: North University of Baia Mare, Oradea University, Livada Agricultural Research Center Satu Mare

Abstract: This project covers the comparative analysis of biotic and abiotic elements in natural and antropic ecosystems, in order to take advantage of the capacity of micro-biota (fungi and micro-organisms) to the ecologic rehabilitation of soil in the tailing ponds generated by mining activities.

5.AIBD

Title: *Application of integrated databases for adopting and restructuring of environment protection natural and artificial factors - AIBD*

Project manager (UNBM): *Prof.dr.eng Anca Mihaly Cozmuta* - Chemistry-Biology Department
North University of Baia Mare, mihalyl@yahoo.com

Time range: 2005-2008

Funding source: CALIST Excelence Reasearch Program

Partners: Agricultural and Veterinary Sciences University of Cluj Napoca, Gent University-Belgium, North University of Baia Mare, Zoology Institute – Science Academy of Moldova Republic

Abstract: The main goal of this project is to develop the national evaluation, processing and certification system of agricultural data conformity in order to reach comparability with the EU countries, by establishing shared criteria, methods and techniques in research – development units and in terms of technologic transfer, as well as in universities with agricultural or environment protection focus.

6.SIG

Title: *Hazard maps designind and assessment of environment quality in mining areas of MM and SM counties using informational geographical systems GIS - SIG*

Project manager (UNBM): *Prof.dr.eng Anca Mihaly Cozmuta* - Chemistry-Biology Department
North University of Baia Mare, mihalyl@yahoo.com

Time range: 2005-2008

Funding source: CNCSIS

Partners: Geography Institute of Romanian Academy, North University of Baia Mare, Analytical Instrumentation Institute Cluj Napoca, Geoproiect Bucuresti, FSM Cluj Napoca

Abstract: This project aims to elaborate an inventory of areas with risk potential in terms of environment pollution, taking into consideration the extraction and preparation of non – ferrous metal activities specific to the Satu Mare and Maramures areas. The inventory of waste storage areas and the tailing ponds was established, including the profiling in terms of mechanical and physical – chemical stability. The results are the inputs needed in the preparation of maps with hazardous areas.

7.CONEEX: <http://inoe.inoe.ro/OTEM/>; <http://inoe.inoe.ro/OTEM2007/>

Title: *Conexions to European Excelency Research In Environment Field*

Consortium coordinator: Prof.dr. Vasile Viman - Chemistry-Biology Department,
North University of Baia Mare, v_viman@hotmail.com

Time range: 2005-2007

Funding source: CEEEX

Partners: North University of Baia Mare, Analytical Instrumentation Institute Cluj Napoca, INOE Bucuresti

Abstract: This project contributes to the education of young researchers under the guidance of expert staff from the country and from abroad in the field of optic – electronic techniques applied in the monitoring of the environment, and aims for professional partnerships to be established between specialists with similar areas of professional focus in the country and abroad.

B.INTERNATIONAL CONTRACTS

1.ZEMIP

Title: *Developing of a biophysical system based on zeolitesmicroorganisms-vegetal species for ecoremediation of tailing ponds coming from gold-silver preparation industry - ZEMIP*

Consortium coordinator: Lecturer dr. eng. Leonard Mihaly Cozmuta - Chemistry-Biology Department
North University of Baia Mare, mihalyi@yahoo.com

Time range: 2009-2011

Funding source: PNCDI 2

Partners: North University of Baia Mare, Johhanesburg – University South Africa

Abstract: The goal of this project is to develop a bio – physical system based on zeolites – micro – organisms and vegetal species for the eco – remediation of tailing ponds formed as consequence of the preparation stage in the gold – silver processing industry. The project will take advantage of the synergies between two research teams in two different countries (North University of Baia Mare and Witwatersrand University in Johannesburg, South Africa) that can be generated by bilateral cooperation. The completion of the tasks for which each party is responsible will have as additional impact the development and consolidation of both the human factor and the base of assets available to researchers.

2.CEEPUS II – PL – 0401

Title: *Education in separation and identification of organic xenobiotics in environmental samples and food product- CEEPUS II-PL . 0401 in the field of Analytical Chemistry Applied to Environment Monitoring and Protection*

Project manager (UNBM): Lecturer dr. eng. Leonard Mihaly Cozmuta (2008-2009); Preof.dr.eng. Anca Mihaly Cozmuta (2005-2008)- Chemistry-Biology Department North University of Baia Mare,
mihalyi@yahoo.com, mamihai@yahoo.com

Time range: 2005-2009

Funding source: UE

Partners: North University of Baia Mare, University Pardubice-Czech Republic, Slovak University Technology . Slovak Republic, Technical University of Graz-Austria, University of Pecs . Hungary, Agricultural University Wrodaw . Poland, Medical University of Gdansk . Poland, Comenius University of Bratislava . Slovakia, University of Ljubliana . Slovenia, University of Sofia . Bulgaria, University of Zagreb-Croatia,

Abstract: The main goals of this project are: the development and improvement of methods in use to establish and monitor environment pollution; comparative analysis of the performance of methods of analysis in use in the control and research laboratories in the EU and candidate countries; the analysis of polluting technologies in the partner countries in the consortium; the refining of the quality of curriculums for master and doctoral degrees in instrumental analysis – the branch with the most spectacular progress within the fields of analytic chemistry.

3.IRCYL, ICA 2 – CT – 2000 – 10065

Title: *Investigation of the Risk of Cyanide in Gold Leaching on Health an Environment in Central Asia and Central Europe, IRCYL, ICA 2- CT- 2000- 10065.*

Project manager (UNBM): Prof.dr. Vasile Viman - Chemistry-Biology Department,
North University of Baia Mare, v_viman@hotmail.com

Time range: 2001-2004

Funding source: UE (FP 5)

Partners: North University of Baia Mare, University Pardubice-Czech Republic, Slovak University Technology . Slovak Republic, Technical University of Graz-Austria, University of Pecs . Hungary, Agricultural University Wroclaw . Poland, Medical University of Gdansk . Poland, Comenius University of Bratislava . Slovakia, University of Ljubljana . Slovenia, University of Sofia . Bulgaria, University of Zagreb-Croatia,

Abstract: The aim of this project is to investigate the impact of chemical accidents (spillage of cyanide and heavy metals charged wastewaters) in areas with non – ferrous metallurgy activities on environment and on human health.