Importance of FP7-REGPOT support: impacts of the CEFSER project

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CEFSER Closing Event and Final Training, 30 July 2012, Novi Sad

- **According to the Lisbon Strategy, the EU should become the most competitive and dynamic knowledge-based economy in the world.**

- **In 2000, EU decided to strengthen its Research and Innovation activities by creating the European Research Area (“ERA”) and link its best RTD institutions throughout the EU.**

ERA is a unified research area open to the world based on free circulation of researchers, scientific knowledge and technology.

Through ERA, the Union and its Member States are STRENGTHENING their scientific and technological bases, their competitiveness and their capacity to collectively address grand challenges.

The "Research Potential" Activity of EU FP7 programme, shortly REGPOT,

was set up to reinforce the capacity of the (already) existing excellent research institutions located in Convergence and Outermost Regions of the EU and permit their full participation in ERA.

FP7-REGPOT

Capacities Programme:
- Research infrastructures
- Research for the benefit of SMEs
- Regions of knowledge
- Research potential of Convergence Regions
- Science in society
- Support to the coherent development of research policies
- International cooperation

Excellent research entities in the Convergence regions have been allowed through REGPOT activity to upgrade their RTD capacity through:

- **the recruitment of highly skilled experienced researchers,**
- **the acquisition of state of the art equipment, and**
- **the increase of the visibility of their S&T excellence.**

Expert Group on Research Potential Project Portfolio: Analysis and recommendations for the future evolution of the Research Potential Activity of the EU-EU FP7 Capacities Programme, FINAL REPORT, 17 May 2011

- **In this way, the aim of REGPOT has been to expand ERA to the entire territory of the EU and make ERA “more balanced and equilibrated".**

- **The priority was to increase the research potential in these regions and improve their knowledge & technological processes - contributing to the growth, productivity and employment in these regions.**

The ultimate aim has been the integration of the supported research entities into ERA as well as the improvement of their participation in EU FP7 projects.

✓**Undoubtedly, "Research Potential" has been the ENTRANCE GATE for many research entities and researchers to other EU FP7 projects and the best path to upgrade their research capacities through a minimal bureaucratic process.**

Expert Group on Research Potential Project Portfolio: Analysis and recommendations for the future evolution of the Research Potential Activity of the EU-EU FP7 Capacities Programme, FINAL REPORT, 17 May 2011

Addressing the objectives of the FP7-REGPOT-1 call from 2008, project proposal shortly named 'CEFSER' was evaluated with maximum score, 15/15, being accepted for financing in period 2009-2012, GA 229629.

Project name: Reinforcing research potential in the Laboratory for Chemical Contaminants at the Faculty of Technology towards the establishment of the Center of Excellence in Food Safety and Emerging Risks

The project beneficiary: Faculty of Technology, University of Novi Sad

The project coordinator: Prof. Dr. Biljana Škrbić

Research potential of Serbia unlocked and developed by REGPOT calls: statistics of success and intensity of efforts

(overview of efforts in Serbia to participate in Research Potential calls given in the **Report on Key Players in Convergence Regions** *written in 2011 within the FP7 ResPotNet project)*

	RegPot call, deadline Nr and short names of financed projects	Project proposals on reserve list	Project proposals above quality threshold	Project proposals below quality threshold	Total number of eligible Proposals (% of the financed projects)
1	*Call identifier: FP7-REGPOT-2007-1* Deadline: 24/04/2007 1. 205533 / REGMINA, 2. 206929 / SERVICE	1	2	6	11 (18%)
2	*Call identifier: FP7-REGPOT-2008-1* Deadline: 14/03/2008 1. 229629 / CEFSER	0	17	18	36 (3%)
3	*Call identifier: FP7-REGPOT-2009-1* Deadline: 13/02/2009 1. 245916 / NANOTECH FTM	1	12	5	19 (5%)
4	*Call identifier: FP7-REGPOT-20010-1* Deadline: 17/12/2009 0	0	21	7	28 (0%)
5	*Call identifier: FP7-REGPOT-2011-1* Deadline: 07/12/2011 0	1	16	8	25 (0%)
6	*Call identifier: FP7-REGPOT-2012-1* Deadline:				
Σ	4	3	68	44	119 (3%)

‘CEFSER’ CONCEPT AND OBJECTIVES

1. to reinforce the research capacities at the Laboratory for Chemical Contaminants in Food and the Environment (LabCHEMCONT) - the Faculty of Technology (FT) that has been already INTERNATIONALLY RECOGNIZED with its research in the field of FOOD AND ENVIRONMENTAL SAFETY

2. to become a unique Western Balkan Country (WBC) lab strongly linked with the top EU research institutions, starting with four outstanding EU institutions that support the project

3. to be capable to spread the excellence and raise awareness in the region contributing to the harmonization of European Research Area (ERA)

‘CEFSER’ OUTCOMES

✓Capital upgrade of the material resources

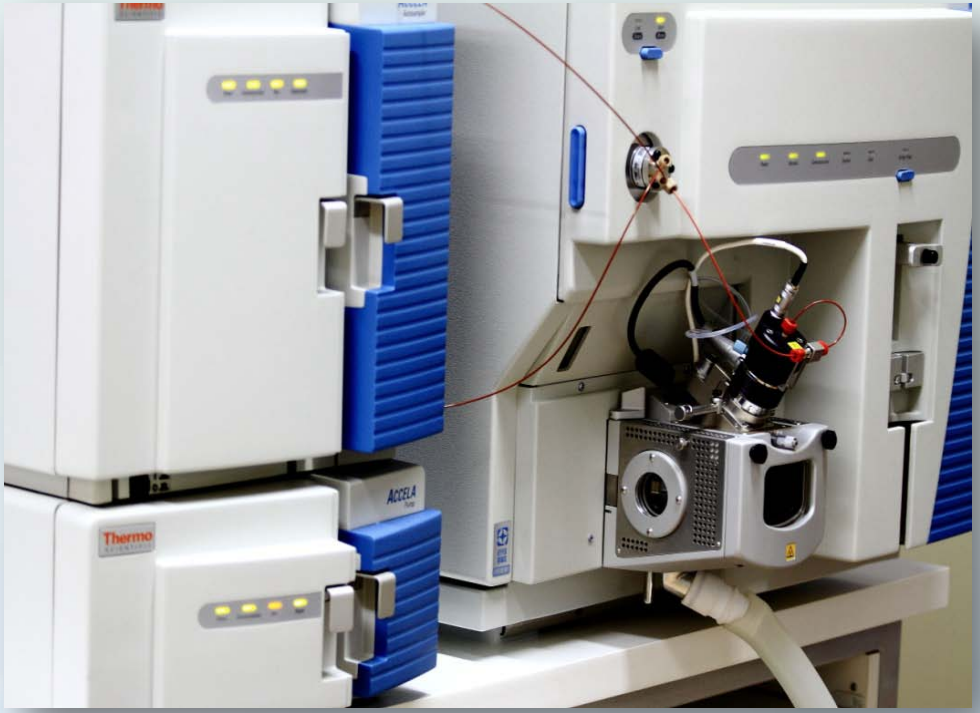
✓Reinforced human resources

✓Strong links with EU institutions

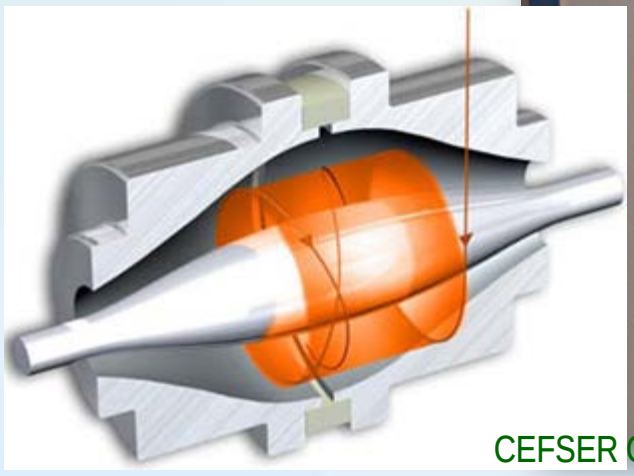
✓Enhanced visibility of the Lab, the established Center and of the Faculty of Technology

Through the FP7 project *CEFSER*, *Laboratory for Chemical Contaminants* at the Faculty of Technology has been *upgraded* with three instruments:

Ultra high performance liquid chromatography coupled to tandem mass spectrometry (Accela UHPLC-TSQ Vantage MS/MS)



Ultra high performance liquid chromatography coupled to high resolution mass spectrometry with Orbitrap technology (Accela UHPLC-Exactive MS)



Gas chromatograph equipped with micro electron-capture detector (GC/μECD, Agilent 7890A)

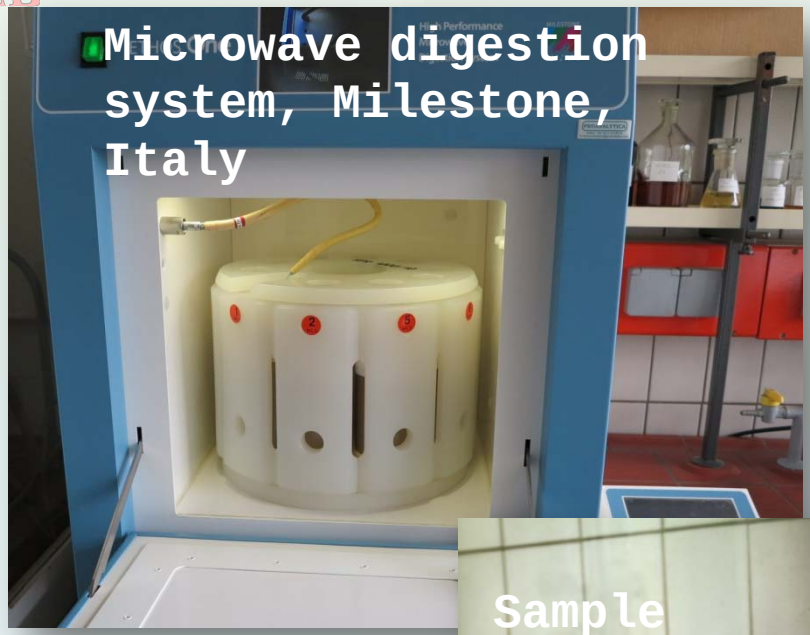
Subsequently, important upgrades of the material resources have been made through the EU projects within Hungary–Serbia IPA (Instrument for Pre-accession) Cross-border Co-operation Programme, the projects that were based on the CEFSER resources!!!

Magyarország-Szerbia
IPA Határon Átnyúló Együttműködési Program

Hungary-Serbia
IPA Cross-border Co-operation Programme

Mađarska-Srbija
IPA prekogranični program

Capital upgrade of the material resources…



‘CEFSER’ OUTCOMES

✓Capital upgrade of the material resources

✓Reinforced human resources

✓Strong links with EU institutions

✓Enhanced visibility of the Lab and the established Center

- **hiring of new researchers,**
- **training of the staff in order to be ready to cope with the different aspects of food safety and emerging risks,**

- **study visits of the CEFSER staff members in EU network institutions,**
- **participation in well established events dedicated to the food safety and environmental issues**

Members of the CEFSER team, including young researchers employed at the Faculty of Technology through the CEFSER project, were trained on new instruments, …

… learning all from

basic maintenance and hardware troubleshooting,

to method development,

compound optimization,

calibration,

to running real samples and

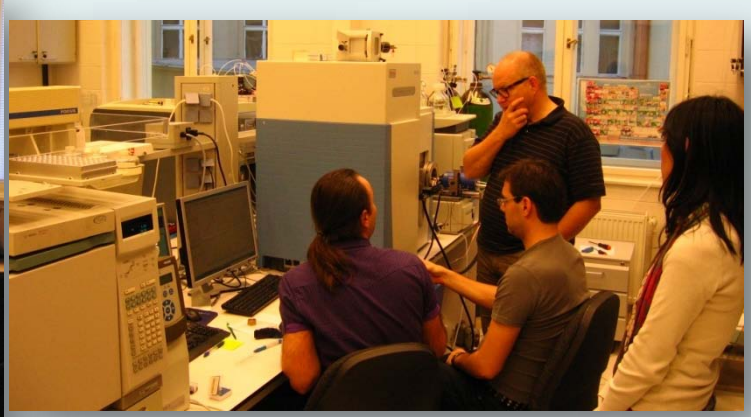
processing of the acquired data.

Early stage researchers had also opportunity to expand their knowledge by participating in international trainings:

- ✓ *International school: "Monitoring, fate and toxicity of toxic compounds in the terrestrial environment", Nova Gorica, Slovenia, December 2010*

- ✓ *Course "Liquid Chromatography and Mass Spectrometry", Faculty of Technology and Metallurgy, Belgrade, October 2010*

- ✓ *DART-TOFMS for authenticity and traceability purposes and profiling, FP6 TRACE project, Institute of Chemical Technology, Prague, Czech Republic, November 2009*



CEFSER team members also extended the knowledge through study visits to CEFSER supporting institutions:

-Institute of Chemical Technology, Prague, Czech Republic,

-Department of Environmental Chemistry, Institute of Environmental Assessment and Water Research, Barcelona, Spain,

-CHIRON, Trondheim, Norway

Furthermore, several important international events were attended by the CEFSER team members, like:

- **Congress 'FOOD RESEARCH IN SUPPORT TO SCIENCE–BASED REGULATION' , Prague, April 21-22, 2009;**
- **WATERS Food Summit, Istanbul, April 29 -30, 2009;**
- **TRACE project workshop on "Determining the geographical origin of food - trace elements and isotopic patterns in food verification", Prague, November 03, 2009,;**
- **4th Symposium on Recent Advances in Food Analysis, Prague, November 04-06, 2009;**

- **The 2nd Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE 09) & SECOTOX Conference, Mykonos, Greece, June 21-26, 2009;**
- **Pre10 Conference, Protection and Restoration of the Environment X, Corfu, Greece, July 05-09, 2010;**
- **Conferentia Chemometrica, Sumeg, Hungary, September 18-21, 2011;**
- **12th Eurasia Conference on Chemical Sciences, Corfu, Greece, April16-21, 2012;**
- **XIII Chemometrics in Analytical Chemistry, Budapest, Hungary, June 25-29, 2012.**

‘CEFSER’ OUTCOMES

✓Capital upgrade of the material resources

✓Reinforced human resources

✓Strong links with EU institutions

✓Enhanced visibility of the Lab and the established Center

The strong links have been established with four institutions that supported the CEFSER project:

- **CHIRON AS from Norway,**
- **Institute for Environmental Studies (IVM) at Vrije University (VU) from the Netherlands,**
- **the Spanish Instituto de Investigaciones Quimicas y Ambientales from Barcelona (IIQAB-CSIC), and**
- **Institute of Chemical Technology (ICT) from Prague, Czech Republic**

This networking gave the opportunity to work with the famous labs, improving our SKILLS and ABILITIES to successfully join the main international research activities and projects.

With CEFSER supporting partners, 2 FP7-KBBE project proposals have been prepared jointly.

Furthermore, the CEFSER capacities have been the base for contracting more projects on both national and international levels, through which strong links with EU institutions have been established.

The projects that followed the CEFSER, in the period from 2010, are:

- **2 Hungarian-Serbian IPA projects,**
- **5 bilateral projects**
- **national project, and**
- **provincial project**

In 2 Hungarian-Serbian IPA projects:

***LACREMED* HUSRB/1002/214/147**

(2012-2013; total budget: 287000 Euro), and

***BIOXEN* HU-SRB/0901/214/150**

(2010-2011; total budget: 248000 Euro)

the research interest has been:

Magyarország-Szerbia
IPA Határon Átnyúló Együttműködési Program

Mađarska-Srbija
IPA prekogranični program

- **identification and quantification of the various pesticides and their degradation products in soil and water,**

- **determination of selected pesticides degradation kinetics**

National research project No. 172050 has been funded by the Serbian Ministry of Education and Science, 2011-2014:

Development and application of the advanced chromatographic and separation methods in the analysis of xenobiotics and their degradation pathways in biotic and abiotic matrices

Funding amount: 316 810,00 EUR

Strong links with EU institutions…

Project gathers researchers from different institutions of various expertise due to its multidisciplinary approach :

- **Faculty of Technology**, University of Novi Sad, Serbia
- **Faculty of Medicine**, University of Novi Sad, Serbia
- **Faculty of Sciences**, University of Novi Sad, Serbia
- **Faculty of Natural Sciences and Mathematics**, Ss. Cyril and Methodius University in Skopje, Macedonia
- **Faculty of Science and Informatics**, University of Szeged, Hungary

Project funded by the Secretariat for Science and Technological Development of the Vojvodina Province, 2011-2014:

Estimation of chemical safety of market basket and population dietary exposure

Partner: Department of Chemistry - University of Ioannina, Greece

Funding amount: 41 280,00 EUR

Bilateral projects:

1. The project of **Serbian-Spanish** programme of scientific and technological cooperation, 2012-2013:

Advanced chromatographic and mass spectrometric techniques in food chemical safety analysis

Partner: Department of Environmental Chemistry, Institute of Environmental Assessment and Water Research, Barcelona, Spain

Funding amount: 14000,00 EUR

This bilateral cooperation represent opportunity to further advance the analytical experience of both teams knowing that the instruments available in our labs have complementary ranges of application.

Currently, the analysis of heavy elements and mycotoxins presence in baby food as well in different foodstuffs most widely consumed by Serbian and Spanish population have been conducting in the CEFSER Lab …

…parallel to the analysis of emerging pollutants, like perfluorinated compounds and bisphenol A, in the same food commodities in the laboratory of the Spanish partner - Department of Environmental Chemistry Institute of Environmental Assessment and Water Research (IDÆA-CSIC)

2. The project of **Serbian-Portugal** programme of scientific and technological cooperation, 2011-2012:

Polycyclic aromatic hydrocarbons and biogenic amines in smoked traditionally manufactured meat products from Serbia and Portugal

(Partner: Faculty of Veterinary Medicine – Technical University of Lisbon, Lisbon, Portugal)

Funding amount: 8000,00 EUR

Project aims have been set to gather significant scientific data on the **food quality and safety aspects** of the **smoked traditionally manufactured meat products** available in both countries.

Portuguese and Serbian researchers in front of the joint poster presentation during the 2nd CEFSER Workshop, 8-10 September 2011

3. The Serbian–Croatian intergovermental S&T programme, 2011-2012:

Inorganic and organic pollutants in urban areas

Funding amount: 6000,00 EUR

(Partner: Croatian Geological Survey, Zagreb, Croatia)

The project objective has been determination of presence and distribution of **organic** and **inorganic pollutants** in the urban areas in order to make **geochemical maps** of investigated areas.

4. **The Serbian–Hungarian** intergovermental S&T programme, 2010-2011:

Comparison of various analytical and chemometric methods

Funding amount: 7000,00 EUR

(Partner: Chemical Research Center - Hungarian Academy of Sciences, Budapest, Hungary)

The project enabled the share of the **new achievement in chemometrics** as well as **transfer of the relevant experience** between the partner institutions through joint research and discussion during the meetings and conferences.

- *T. Stafilov, B. Škrbić, J. Klanova, P. Čupr, I. Holoubek, M. Kočov, N. Đurišić Mladenović, Chemometric assessment of the semivolatile organic contaminants content in the atmosphere of the selected sites in the Republic of Macedonia.* ***Journal of Chemometrics*** *25 (2011) 262-274*
- *K. Heberger, B. Škrbić, Ranking and Similarity for Quantitative Structure Retention Relationship Models in Predicting Lee Retention Indices of Polycyclic Aromatic Hydrocarbons,* ***Analytica Chimica Acta*** *716 (2012) 92-100*

5. The project of Serbian–Slovenian

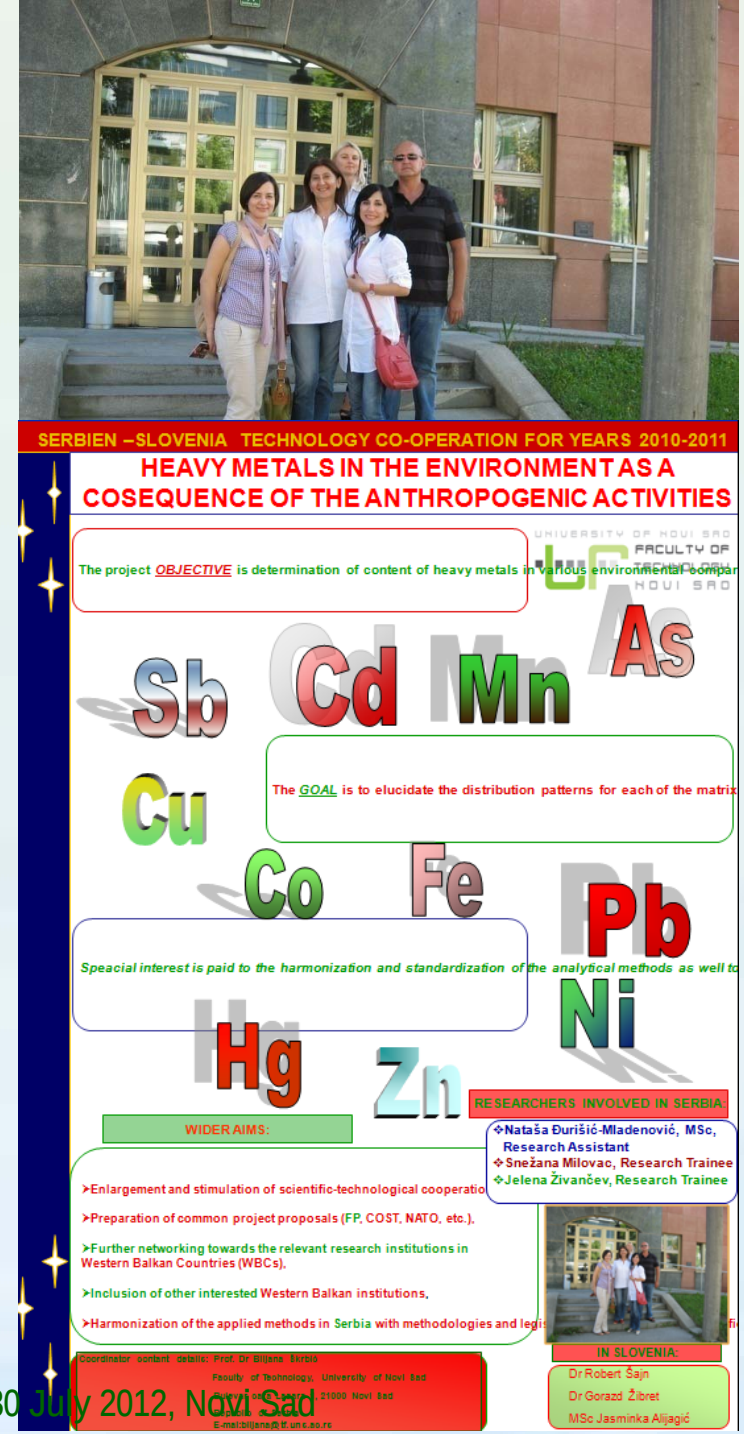
intergovermental S&T programme, 2010-2011:

Heavy metals in the environment as a consequence of the anthropogenic activities

(Partner: Geological Survey of Slovenia, Ljubljana, Slovenia)

Funding amount: 6500,00 EUR

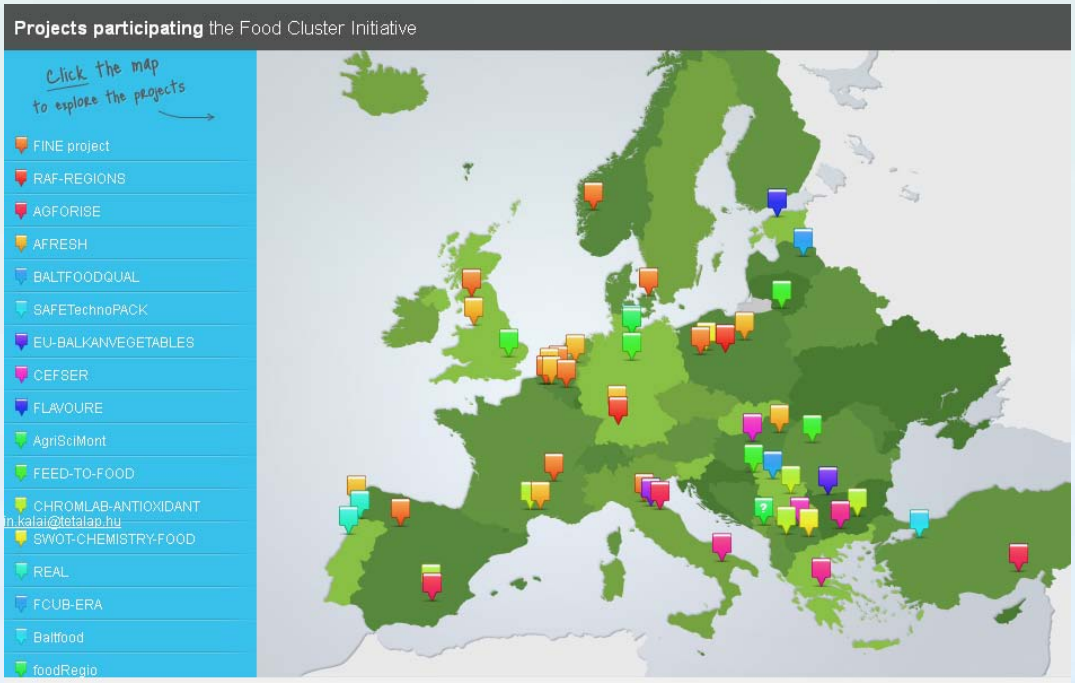
The project objective was determination of content of **heavy metals** in various environmental compartments, as a consequence of anthropogenic activities.



From the very begging of the project lifetime, CEFSER is a member of the FOOD CLUSTER initiative (FCI) of European Commission, …

Strong links with EU institutions…

… a 'pilot' scheme designed to establish European clusters of coordination in order to enhance regional research capacity building and regional economic development with significant impact at local level.



Every meeting of the FCI have been the opportunity to learn more about the current opportunity for collaborations within the EC programmes and to share the experience with the researchers from different EU regions.

Food Cluster
INITIATIVE

‘CEFSER’ OUTCOMES

✓Capital upgrade of the material resources

✓Reinforced human resources

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✓Enhanced visibility of the Lab and the established Center

The events organized by the CEFSER team have been attended by numerous researchers from Serbia and Western Balkan Countries:

2012

5th CEFSER Training Course - *Analysis of Chemical Contaminants in Food and the Environment*, 7-11 May 2012, Novi Sad

2011

BIOXEN Training Course - High Resolution Mass Spectrometry of Xenobiotics, 1-3 June 2011, Novi Sad

2nd CEFSER Workshop – Persistent Organic Pollutants in Food and Environment, 8-10 September 2011, Novi Sad

BIOXEN Seminar - *Novel Approaches for Environmental Protection*, 8-10 September 2011, Novi Sad

4th CEFSER Training Course - Persistent Organic Pollutants in Food and Environment: Risk Assessment, 14-15 November 2011, Novi Sad

2010

1st CEFSER Training Course – Capabilities of U-HPLC-MS/MS in Analysis of Contaminants and Pharmaceutical Compounds in Food and the Environment, 6-8 April 2010, Novi Sad

2nd CEFSER Training Course - Quality Assurance (QA) and Quality Control (QC) Procedures in Analysis of Contaminants and Pharmaceutical Compounds in Food and the Environment, 9 April 2010, Novi Sad

1st CEFSER Workshop - *Regional Perspectives in Food Safety,* 14 September 2010, Novi Sad

12th Danube-Kris-Mures-Tisa (DKMT) Euroregion Conference on Food, Environment and Health, 14-15 September 2010, Novi Sad

3rd CEFSER Training Course - *High Resolution Mass Spectometry in Quantitative Analysis and Screening of Organic Contaminants in Food and Environment,* 16-17 September 2010, Novi Sad

BIOXEN Meeting - Good Neighborours Creating Common Future - Development of Xenobiotic-Degrading Bioaugmentation, 26 October 2010, Novi Sad

Course *"Novel Chemometric Methods* - An Introduction to Multivariate Statistical Techniques", 30 November 2010, Novi Sad

Enhanced visibility of the Lab and the established Center…

2009

CEFSER Symposium - Communicating Science and Risks, 30 November 2009, Novi Sad

ОБАВЕЗА ЈЕ ИСТРАЖИВАЧА НА ЕВРОПСКИМ ПРОЈЕКТИМА ДА ОБЗНАНЕ СВОЈ ПОСАО

Да се зна шта плаћамо и једемо

Колики је значај пројеката чији су носиоци истраживачи са наших универзитета и како их научници могу приближити ширем кругу научне заједнице, само су неки од питања разматрана на јучерашњем симпозијуму "Пренос научних сазнања – изазови и ризици" на новосадском Технолошком факултету. Циљ је био упознавање домаће јавности с радом на европском пројекту CEFSER – "Јачање истраживачког потенцијала Лабораторије Технолошког факултета за анализу загађујућих материја и формирање Центра изврсности за безбедност хране и њене ризике", који је започет 1. фебруара, а финансира га Европска комисија.

– Овај трогодишњи пројекат је усмерен на јачање истраживачких капацитета наше лабораторије за анализу загађујућих материја у животној средини и храни – каже проф. др Биљана Шкрбић, координаторка пројекта CEFSER, и наглашава да је он тим више вредан интересовања за нас што је Србија једина земља у којој ће се спровести један од европских пројеката јер је за њега било предвиђено да буде реализован у земљама чланицама ЕУ. Наиме, средства за пројекат обезбеђена су из Седмог оквирног програма ЕУ (ФП-7), а подршку му пружају стручњаци из Европске мреже за научно и комуникативно извештавање о ризицима (ЕНРИС). Циљ ове мреже је да научнике приближи јавности, али и да научно-истраживачке ризике комуницира с јавношћу.

Др Биљана Шкрбић

CEFSER је пројекат из Седмог оквирног програма ЕУ (ФП-7), а подршку му пружају водећа истраживачка центра из земаља ЕУ: Институт за хемијску технологију из Прага (Чешка), Институт за хемијска истраживања животне средине из Барселоне (Шпанија), Институт за заштиту животне средине Универзитета Врије из Амстердама (Холандија) и предузеће CHIRON AS из Трондхајма (Норвешка). Пројекат је омогућио тако да се укључи у европске интеграције и мултидисциплинарни приступ решавања проблема у науци, да би се на крају добио применљив производ или услуга која ће служити потребама човечанства. Крајњи доприноси пројекта биће побољшање истраживачких капацитета Новосадског Технолошког факултета, његова боља интеграција у европски контекст, а у ширењу лабораторија за анализу загађујућих материја формирање се центар изврсности (што ће рећи пристижна институција) за безбедност хране и њене ризике за Западни Балкан.

– Поштујући се приликом да убудуће у ЕУ, имам је обавезе и да јавности објашњавамо интересе ЕУ у области науке – истиче професорка Шкрбић. – Подизање свести о значају безбедности хране је један од основних задатака које пробао спровести у Србији.

В. Чекић

CEFSER Closing Event and Final Training, 30 July 2012, Novi Sad

The lecturers from the outstanding European institutions, including the world well known researchers in the field of chemical contaminants in food and the environment,

contributed to the events,

recognizing the importance of the CEFSER Lab in the region as well as for the European Research Area:

Enhanced visibility of the Lab and the established Center…

Prof. Dr. **Jana Hajšlová,** Department of Food Chemistry & Analysis, Institute of Chemical Technology, Prague, Czech Republic

Prof. Dr. **Karl-Werner Schramm,** Helmholtz Zentrum Munchen, German Research Center for Environmental Health, Institute of Ecological Chemistry, Neuherberg, Germany

Prof. Dr. **Karoly Heberger**, Chemical Research Center, Hungarian Academy of Sciences, Budapest, Hungary

Prof. Dr. **Ivan Holoubek**, RECETOX (Research Centre for Toxic Compounds in the Environment), Masaryk University, Brno, Czech Republic

Enhanced visibility of the Lab and the established Center…

Prof. Dr. **Mira Petrović**, CSIC-IDAEA, Barcelona, Spain

Dr. **Stefan van Leeuwen**, Institute for Environmental Studies (IVM), Free University, Amsterdam, The Netherlands

Dr. **Jon E. Johansen**, CHIRON AS, Trondheim, Norway

Prof. Dr. **Carmen Cámara**, Dr. Jon Sanz-Landaluze, Faculty of Chemistry, Complutense University of Madrid, Madrid, Spain

CEFSER Closing Event and Final Training, 30 July 2012, Novi Sad

Enhanced visibility of the Lab and the established Center…

Prof. Dr. **Csaba Vágvölgyi**, Department of Microbiology, Faculty of Science and Informatics, University of Szeged, Szeged, Hungary

Prof. Dr. **Trajče Stafilov**, Faculty of Science and Mathematics, Sts. Cyril and Methodius University, Republic of Macedonia

Dr**. Michal Godula**, Food Safety Specialist, Thermo Fisher Scientific, Prague, Czech Republic

Dr**. Philippe Verlinde**, Institute of Reference Materials and Measurements, Geel, Belgium

Results of the successful networking might be recognized in the several common articles published in leading international journals:

K. Héberger, B. Škrbić, *Ranking and similarity for quantitative structure–retention relationship models in predicting Lee retention indices of polycyclic aromatic hydrocarbons,* Anal. Chim. Acta, 716, 92-100, 2012.

B. Škrbić, J. Živančev, N. Đurišić-Mladenović, M. Godula, *Principal mycotoxins in wheat flour from the Serbian market: levels and assessment of the exposure by wheat-based products,* Food Control, 25, 389-396, 2012.

Analytica Chimica Acta 716 (2012) 92–100

Contents lists available at SciVerse ScienceDirect

Analytica Chimica Acta

journal homepage: www.elsevier.com/locate/aca

Ranking and similarity for quantitative structure–retention relationship models in predicting Lee retention indices of polycyclic aromatic hydrocarbons

Károly Héberger[a,*], Biljana Škrbić[b]

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Food Control 25 (2012) 389–396

Contents lists available at SciVerse ScienceDirect

Food Control

journal homepage: www.elsevier.com/locate/foodcont

Principal mycotoxins in wheat flour from the Serbian market: Levels and assessment of the exposure by wheat-based products

Biljana Škrbić[a,*], Jelena Živančev[a], Nataša Đurišić-Mladenović[a], Michal Godula[b]

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[b] Thermo Fisher Scientific, Prague, Czech Republic

Enhanced visibility of the Lab and the established Center…

B. Škrbić, A. Malachova, J. Živančev, Z. Veprikova, J. Hajšlova, *Fusarium mycotoxins in wheat samples harvested in Serbia: A preliminary survey,* Food Control, 22, 1261-1267, 2011.

T. Stafilov, B. Škrbić, J. Klanova, P. Čupr, I. Holoubek, M. Kočor, N. Đurišić-Mladenović, *Chemometric assessment of the semivolatile organic contaminants content in the atmosphere of the selected sites in the republic of Macedonia,* J. Chemometr., 25, 262-274, 2011.

Food Control 22 (2011) 1261–1267

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ELSEVIER

Fusarium mycotoxins in wheat samples harvested in Serbia: A preliminary survey

Biljana Škrbić [a,*], Alexandra Malachova [b], Jelena Živančev [a], Zdena Veprikova [b], Jana Hajšlová [b]

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Special Issue Article

Journal of CHEMOMETRICS

Received: 3 August 2010, Revised: 21 October 2010, Accepted: 19 November 2010, Published online in Wiley Online Library: 17 March 2011

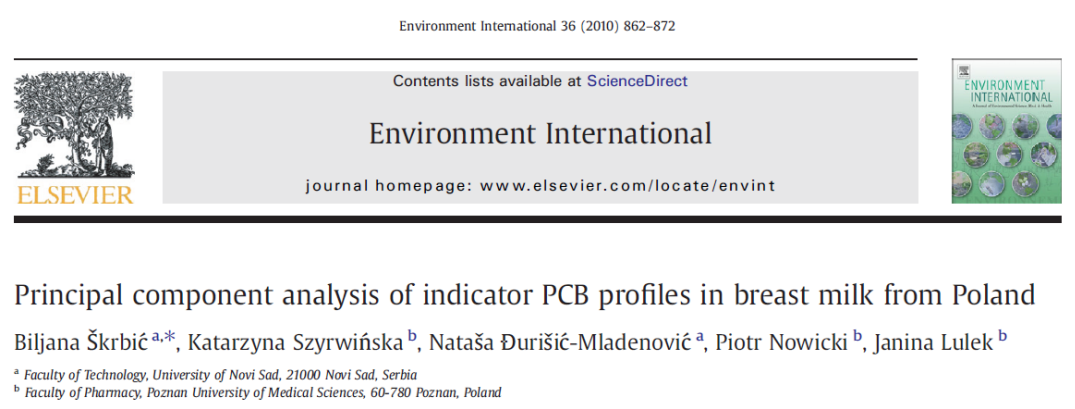
(wileyonlinelibrary.com) DOI: 10.1002/cem.1374

Chemometric assessment of the semivolatile organic contaminants content in the atmosphere of the selected sites in the Republic of Macedonia

Trajče Stafilov[a], Biljana Škrbić[b]*, Jana Klánová[c], Pavel Čupr[c], Ivan Holoubek[c], Marin Kočov[d] and Nataša Đurišić-Mladenović[b]

Enhanced visibility of the Lab and the established Center…

B. Škrbić, K. Szyrwińska, N. Đurišić-Mladenović, P. Nowicki, J. Lulek, *Principal component analysis of indicator PCB profiles in breast milk from Poland*, Environ. Int., 36, 862-872, 2010.



Environment International 36 (2010) 862–872

Contents lists available at ScienceDirect

Environment International

journal homepage: www.elsevier.com/locate/envint

ELSEVIER

Principal component analysis of indicator PCB profiles in breast milk from Poland

Biljana Škrbić [a,*], Katarzyna Szyrwińska [b], Nataša Đurišić-Mladenović [a], Piotr Nowicki [b], Janina Lulek [b]

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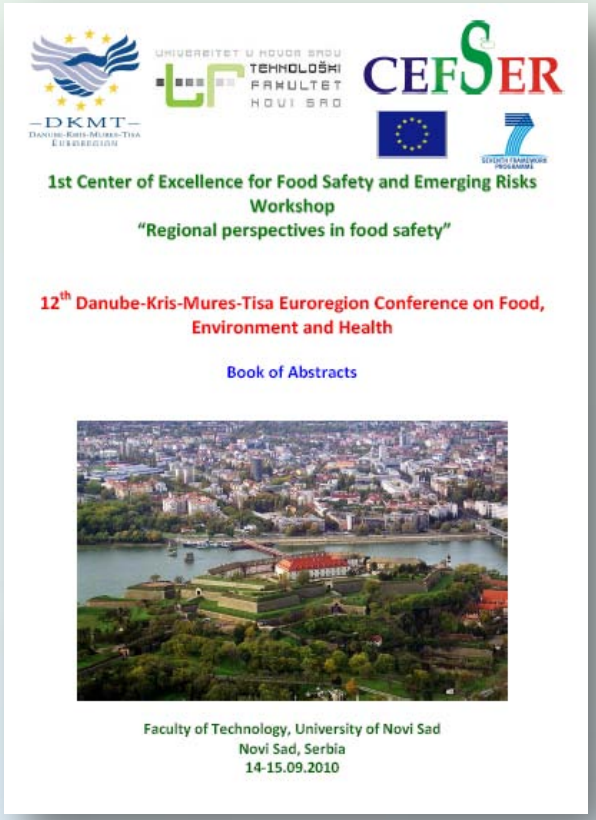
B. Škrbić, J. E. Johansen, N. Đurišić-Mladenović, V. Ivanić, *Occurrence of Polycyclic Aromatic Hydrocarbons in a Wide Variety of Soils Worldwide: a Chemometrical Approach,* PROGRESS IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY, VOL II, PTS A AND B Pages: 1859-1868, 2009.

The CEFSER lab hosted:

- **over 30 researchers from the neighboring Western Balkan Countries, as well as**
- **a researcher, Eline Akk from FP7 project FLAVOURE of the Estonian Research Institute of Agriculture, who visited the Laboratory for Mass Spectrometry two times to gain expertise in mycotoxin analysis.**

Enhanced visibility of the Lab and the established Center…

Publications: books of abstracts and papers



Enhanced visibility of the Lab and the established Center…

Publications: newsletter

CEFSER newsletter no.1

Faculty of Technology, University of Novi Sad

www.tf.uns.ac.rs/CEFSERweb/CEFSERindex.html

After the 1st year: CEFSER in 2009

CEFSER is the FP7-REGPOT-2008-1 project dedicated to the reinforcement of research capacities at the Laboratory for Chemical Contaminants in Food and the Environment at the Faculty of Technology, University of Novi Sad, Serbia, in order to become a unique Western Balkan Country (WBC) Centre of Excellence in Food Safety and Emerging Risks. It started on Feb 01, 2009, and will last 36 months. The summary of the realized activities and outcomes of CEFSER in the first project year is given hereafter.

CEFSER celebrated the first year anniversary

REINFORCEMENT OF THE MATERIAL RESOUR

Two outstanding instruments are arriving at the CEFSER lab. This is the result of the negotiation of the CEFSER coordinator, Prof. Dr. Biljana Škrbić with the representatives of the world companies for the separation instruments and mass spectrometric detectors, conducted during 2009.

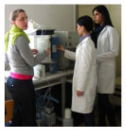
Prof. Dr. Biljana Škrbić explained: "In order to perform the procurement of the instruments as successful as possible in terms of the CEFSER sustainability and attractiveness for the future international research activities, it was decided to try to extend the project budget share allocated to the reinforcement of the material resources in a way to purchase two instruments with complementary application ranges in the field of food and environmental safety instead of one instrument originally planned to be bought". She further said that the CEFSER supporting partners suggested to have ultra performance liquid chromatograph (UPLC) with high resolution mass spectrometer (MS) together with UPLC coupled to triple quadrupole mass spectrometer (MS/MS), originally planned to be bought. Laboratory with such systems is fully equipped for targeted analysis and also for the screening of unknowns, both very important aspects in the food safety analysis, particularly in the analysis of emerging pollutants.

CEFSER supporting partners are excellent res… such as: CHIRON AS, Norway, Institute for E… (IVM) at Vrije University (VU), the Neth… Investigaciones Químicas y Ambientales, Sp… Institute of Chemical Technology (ICT), Czec…

"Now, the CEFSER lab is the first one… possessing Thermo Scientific UHPLC Acc… MS/MS, and Thermo Scientific UHPLC Acce… Orbitrap technology, representing modern ce… research" said Prof. Škrbić and added: "The … practice are now in front of us. The CEFS… designed to fully unlock all our potentials an… the support of the EU partners we are g… methods for the analysis of organic pollut… environment."

In this context, three CEFSER events … with invited lecturers from the supporting in… them might be found on the CEFSER web sit…

- 1st CEFSER Training Course "*Capabilitie… Analysis of Contaminants and Pharmaceutic… and the Environment*", April 06-08, 2010;
- 2nd CEFSER Training Course "*Quality … Quality Control (QC) Procedures in Analysis … Pharmaceutical Compounds in Food and th…* 09, 2010;
- 3rd CEFSER Training Course dedicated t… September 16-17, 2010.



During the installation of Thermo Fisher Scientific UHPLC Accela - TSQ Vantage™ MS/MS in the CEFSER lab

Thermo Fisher Scientific UHPLC Accela -Exactive MS

CEFSER newsletter no.2

August 2010

Faculty of Technology, University of Novi Sad, Novi Sad, Serbia

www.tf.uns.ac.rs/CEFSERweb/CEFSERindex.html

CEFSER in 2010

The FP7-REGPOT-2008-1 proje… the second year of implement… 2010. This year is very importa… because of the arrival of t… analytical instruments in th… intensive training activities a… promotion.

NEW EQUIPMENT AND ANALYTICAL CHALLA…

Two outstanding analytical instruments arrived at the Faculty of Tecnology from the University of Novi Sad during February and March 2010 and are now operational at the Center of Excellence for Food Safety and Emerging Risks (CEFSER) enabling it to be in line with the newest trends in the analysis of organic contaminants.

They are Accela U-HPLC with TSQ Vantage MS/MS and Accela U-HPLC with Exactive MS Orbitrap, Thermo Fisher Scientific, USA. "These two instruments are unique for the whole Western Balkan region and even wider for now, making our lab a modern and an attractive partner for the joint research considering the occurrence of organic contaminants in food and environmental matrices as well" said prof. Biljana Škrbić, the project coordinator, explaining further that new analytical tasks set in the CEFSER lab for the next period deals with the latest analytical challenges in the field of food safety: "It is very challenging to develop analytical methods for the simultaneous determination of as many as possible contaminants in only one run of the instrument. This is also important from the aspect of economical running of analysis and also for the quick determination of reliable data necessary for the assessment of the possible risks as a consequence of the contaminants presence in food. We will focus our attention to the mycotoxins and pesticides, and we are going to include both instruments in developing of the methods for the analysis of these two classes of food contaminants."

Prof. Biljana Škrbić added also that on… configured in a way to enable the ar… compounds that requires special materials … that do not interfere with the analytes. S… information on the occurrence of these con… food and the environment. There is also litt… elsewhere and large work has been und… European projects to determine in wh… compounds are around us. Thus, we are n… actual problem."

Accela U-HPLC with Exactive MS in the CEFSER lab

Members of the CEFSER team, includ… employed at the Faculty of Technology throu… were trained on both instruments by a spec… Scientific company, learning all from basic m… troubleshooting, to method development, … calibration, to running real samples and pr… data. "The training sessions we have with th… Michal Godula, were very fruitful, as we h… basics from the trainer with large practical e… Jelena, and Sanja, the CEFSER youngster… front of us, and we already have had a real … in our every day practice in the CEFSER la… that the team already participated in t… organized by EC-JRC Institute for Re… Measurements, Geel, Belgium.

Accela U-HPLC with TSQ Vantage MS/MS in the CEFSER lab

CEFSER newsletter no.3

February 2011

Faculty of Technology, University of Novi Sad, Novi Sad, Serbia

www.tf.uns.ac.rs/CEFSERweb/CEFSERindex.html

After the 2nd year: CEFSER in 2010

CEFSER team celebrated the second anniversary of the project

The second year of FP7-REGPOT-2008… 229629) was ended… It was very dynam… team members, b… the development … instruments acq… project and the … transfer activities. … CEFSER activities … year is given hereaf…

WIDENING OF RESEARCH ACTIVITES IN TH…

Two outstanding instruments arrived at the Faculty of Technology, University of Novi Sad, in the beginning of 2010; delivery of the third instrument on Feb 01, 2011, has came as a birthday present for the successful project implementation in the second year. The procurement of the instruments was performed in line to the suggestions of the CEFSER Advisory Committee (AC) that gathers the key personnel of four supporting institutions from EU and it considered the CEFSER sustainability and attractiveness for the future international research activities.

The reinforcement of the material resources in the Laboratory for Chemical Contaminants (Lab CHEMCONT) at the Faculty of Technology, University of Novi Sad, through the CEFSER project was completed during the project second year of implementation. The CEFSER Lab now possesses two outstanding instruments: ultra high performance liquid chromatograph (UHPLC Accela, Thermo Fisher Scientific) coupled to triple quadrupole mass spectrometer (TSQ Vantage MS/MS Thermo Fisher Scientific) and UHPLC with high resolution mass spectrometer with Orbitrap technology (Exactive, Thermo Fisher Scientific). These two instruments are unique for the whole Western Balkan Countries (WBCs) region and even wider for now, particularly due to their mass spectrometers with features that separated them from the similar instruments available in the region. The project coordinator, Prof. Biljana Škrbić, clarified the extended research scope of the CEFSER Lab: "Laboratory with such systems, together with the instruments pre-

viously used is equipped for … organic and inorganic contam… unknowns, both very impor… analysis. However," she adde… the analysis of polychlorinate… priority organochlorine compo… for the protection of consum… representatives of the CEFS… AS, Norway; Institute for … University (VU), the Nether… Assessment and Water Re… Chemical Technology (ICT), … purchase GC with electron c… system for the halogenated co…

GC/ECD Agilent 7890

"With all these systems, the… lab has been broaden, and t… new analytical challenges in f… of multicomponent mixture of … resolution MS, development … APPI-MS/MS) for analysis of … issues are new and have ne… even wider in the WBC region"

CEFSER newsletter no.4

August 2011

Faculty of Technology, University of Novi Sad, Novi Sad, Serbia

www.tf.uns.ac.rs/CEFSERweb/CEFSERindex.html

CEFSER research

Reinforcement of the material and human resources of the Laboratory for Chemical Contaminants in Food and the Environment at the Faculty of Technology, Novi Sad, through the FP7-REGPOT-2008-1 project CEFSER (GA 229629) is almost fully completed and the Lab capacities have been directed towards gathering of new knowledge on the chemical pollutants in various food and environmental samples. The research agenda of the Lab is broaden and some of the latest challenges in food safety and environmental protection have been tackled, covering the topics of several national and international projects running and coordinated by the CEFSER Project Coordinator. Through these projects new collaborations with research institutions from EU have been established, proving the attractiveness of the CEFSER Lab. Description of the Lab material resources and the list of recent projects, developed methods and those under development are presented hereafter, and all this could be regarded as a direct indicator of successful project implementation and, in fact, a domino effect caused by CEFSER.

MATERIAL RESOURCES OF CEFSER LAB

- Ultra preformance liquid chromatography (UHPLC) with triple qudrupole mass spectrometer (MS/MS) *Thermo Scientific Accela - TSQ Vantage*,
- UHPLC with high resolution mass spectrometer with Orbitrap technology *Thermo Scientific Accela – Exactive*,
- Atomic absorption spectrometer with a graphite tube *Varian AAS240/GTA120*,
- Gas chromatograph equipped with electron capture detector *Agilent 7890*
- Gas chromatograph equipped with flame-ionization detector *DANI1000*
- Various sample prep equipment: centrifuge…, Milli-Q system for ultrapure water, vacuum rotary evaporator, sample concentrator, shaker, ultrasonic bath, …

METHODS (developed/under development in CEFSER Lab)

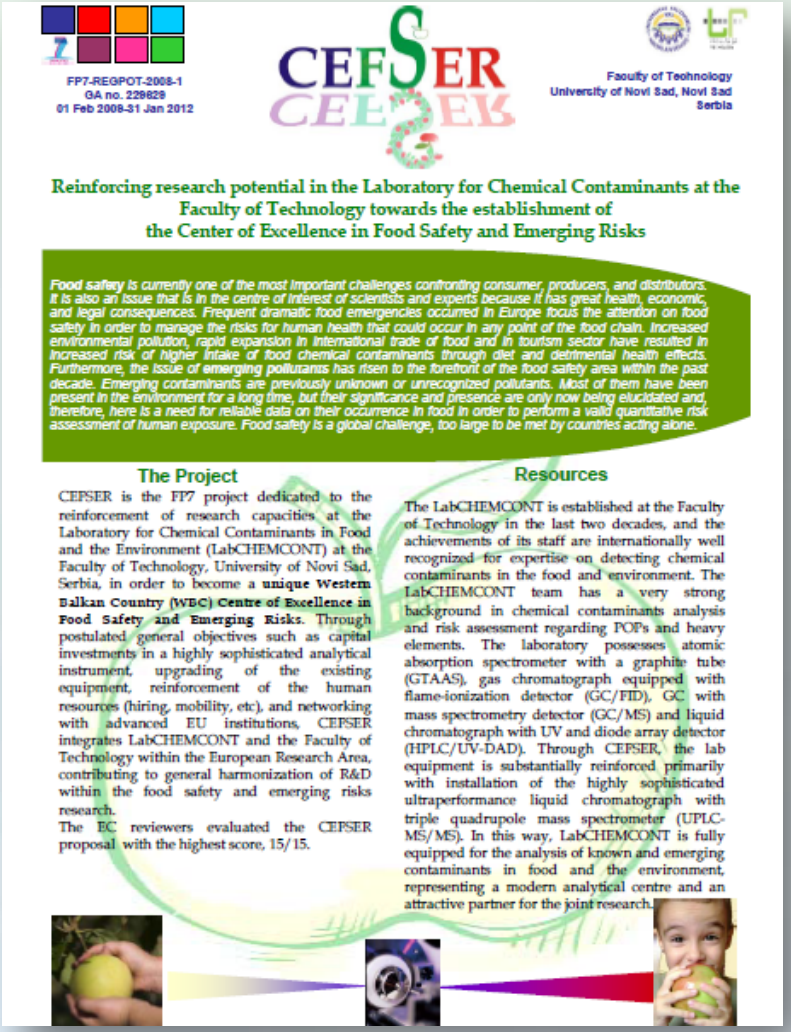
- Multicompound analysis of principal mycotoxins in crude extracts of different food commodities (flours, cereal grains, spices, green coffee) by UHPLC-MS/MS
- Multicompound analysis of selected pesticides in soil and water extracts by UHPLC-MS/MS
- Multicompound screening of food and environmental extracts by UHPLC-HRMS
- Multicompound analysis of organochlorine pesticides and pyrethroids in food and environmental matrices by GC/ECD
- Multicompound analysis of priority (EPA and 15+1 EU) polycyclic aromatic hydrocarbons in food and environmental matrices by UHPLC-APPI-MS/MS
- Analysis of perfluorinated compounds in food and environmental matrices by UHPLC-MS/MS
- Analysis of mineral oil in food and environmental matrices by …

RUNNING PROJECTS IN CEFSER LAB

- *Development and application of the advanced chromatographic and spectrometric methods in the analysis of xenobiotics and their degradation pathways in biotic and abiotic matrices*, Serbian Ministry of Education and Science, No. 172050, 2011-2014.
- *Estimation of chemical safety of market basket and population dietary exposure*, Secretariat of the Vojvodina Province for Science and Technological Development, 2011-2014.
- *Inorganic and organic pollutants in urban areas*, bilateral project within Serbian–Croatian intergovermental S&T programme, 2011-2012.
- *Polycyclic aromatic hydrocarbons and biogenic amines in smoked dry traditionally manufactured meat products from Serbia and Portugal*, Serbian-Portugal intergovermental S&T programme, 2011-2012.
- *Development of xenobiotic-degrading bioaugmentation products (BIOXEN)*, Hungary-Serbia IPA Cross-border Co-operation programme implemented within the 2007 – 2013 European Union financial framework under the Instrument for Pre-accession Assistance (IPA),2010-2011.
- *Comparison of various analytical and chemometric methods*, bilateral project within Serbian–Hungarian intergovermental S&T programme, 2010-2011.
- *Heavy metals in the environment as a consequence of the anthropogenic activities*, bilateral project within Serbian–Slovenian intergovermental S&T programme, 2010-2011.

CEFSER Closing Event and Final Training, 30 July 2012, Novi Sad

Publications: brochures



FP7-REGPOT-2008-1
GA no. 229629
01 Feb 2008-31 Jan 2012

Faculty of Technology
University of Novi Sad, Novi Sad
Serbia

Reinforcing research potential in the Laboratory for Chemical Contaminants at the Faculty of Technology towards the establishment of the Center of Excellence in Food Safety and Emerging Risks

Food safety is currently one of the most important challenges confronting consumer, producers, and distributors. It is also an issue that is in the centre of interest of scientists and experts because it has great health, economic, and legal consequences. Frequent dramatic food emergencies occurred in Europe focus the attention on food safety in order to manage the risks for human health that could occur in any point of the food chain. Increased environmental pollution, rapid expansion in international trade of food and in tourism sector have resulted in increased risk of higher intake of food chemical contaminants through diet and detrimental health effects. Furthermore, the issue of emerging pollutants has risen to the forefront of the food safety area within the past decade. Emerging contaminants are previously unknown or unrecognized pollutants. Most of them have been present in the environment for a long time, but their significance and presence are only now being elucidated and, therefore, here is a need for reliable data on their occurrence in food in order to perform a valid quantitative risk assessment of human exposure. Food safety is a global challenge, too large to be met by countries acting alone.

The Project

CEFSER is the FP7 project dedicated to the reinforcement of research capacities at the Laboratory for Chemical Contaminants in Food and the Environment (LabCHEMCONT) at the Faculty of Technology, University of Novi Sad, Serbia, in order to become a **unique Western Balkan Country (WBC) Centre of Excellence in Food Safety and Emerging Risks**. Through postulated general objectives such as capital investments in a highly sophisticated analytical instrument, upgrading of the existing equipment, reinforcement of the human resources (hiring, mobility, etc), and networking with advanced EU institutions, CEFSER integrates LabCHEMCONT and the Faculty of Technology within the European Research Area, contributing to general harmonization of R&D within the food safety and emerging risks research.

The EC reviewers evaluated the CEFSER proposal with the highest score, 15/15.

Resources

The LabCHEMCONT is established at the Faculty of Technology in the last two decades, and the achievements of its staff are internationally well recognized for expertise on detecting chemical contaminants in the food and environment. The LabCHEMCONT team has a very strong background in chemical contaminants analysis and risk assessment regarding POPs and heavy elements. The laboratory possesses atomic absorption spectrometer with a graphite tube (GTAAS), gas chromatograph equipped with flame-ionization detector (GC/FID), GC with mass spectrometry detector (GC/MS) and liquid chromatograph with UV and diode array detector (HPLC/UV-DAD). Through CEFSER, the lab equipment is substantially reinforced primarily with installation of the highly sophisticated ultraperformance liquid chromatograph with triple quadrupole mass spectrometer (UPLC-MS/MS). In this way, LabCHEMCONT is fully equipped for the analysis of known and emerging contaminants in food and the environment, representing a modern analytical centre and an attractive partner for the joint research.

EUROPEAN COMMISSION

FP7-REGPOT-2008-1
GA no. 229629
01 Feb 2009-31 Jan 2012

Unique and Modern WBC Centre for Joint Research on the Chemical Contaminants in Food and the Environment

FACULTY OF TECHNOLOGY NOVI SAD

UNIVERSITAS STUDIORUM NOVI SADIENSIS

Publications: monograph

Enhanced visibility of the Lab and the established Center…

CEFSER website: www.tf.uns.ac.rs/CEFSERweb/CEFSERindex.html

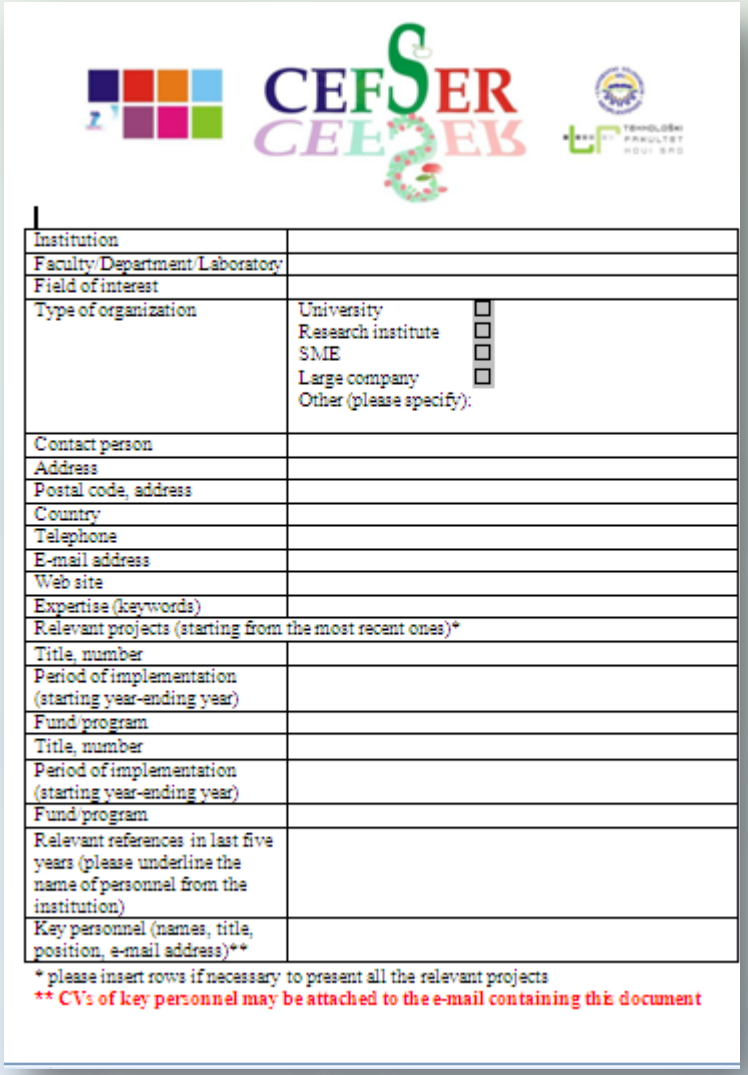
Enhanced visibility of the Lab and the established Center…

Electronic database, so-called ChemContDATABASE, has been published recently within the CEFSER web site.

It is designed to provide a survey on WBC and EU institutions known for the research in the field of food safety and environmental protection and to list the relevant WBC experts.

Database consists of details provided by the researchers * from Albania, Croatia, Republic of Macedonia and Serbia, responding to the CEFSER Questionnaire till July 2012.

** solely responsible for given information*



Institution	
Faculty/Department/Laboratory	
Field of interest	
Type of organization	University ☐ Research institute ☐ SME ☐ Large company ☐ Other (please specify):
Contact person	
Address	
Postal code, address	
Country	
Telephone	
E-mail address	
Web site	
Expertise (keywords)	
Relevant projects (starting from the most recent ones)*	
Title, number	
Period of implementation (starting year-ending year)	
Fund/program	
Title, number	
Period of implementation (starting year-ending year)	
Fund/program	
Relevant references in last five years (please underline the name of personnel from the institution)	
Key personnel (names, title, position, e-mail address)**	

* please insert rows if necessary to present all the relevant projects

** CVs of key personnel may be attached to the e-mail containing this document

The database could be searched by the names of researchers or institutions.

ChemContDATABASE

Researchers (in alphabetic order):

Babić, Jurislav (questionnaire)
Bujan, Marija (questionnaire)
Ćirković Veličković, Tanja (questionnaire, CV)
Durgo, Ksenija (questionnaire, CV)
Havranek, Jasmina (questionnaire, CV)
Grizelj, Juraj (questionnaire)
Gusman, Vera (questionnaire)
Ilak Peršurić, Anita (questionnaire)
Ilić, Zoran (questionnaire)
Kovaček, Ivančica (questionnaire)
Lazo, Pranvera (questionnaire, CV)
Marjanović Jeromela, Ana (questionnaire)
Najdenkoska, Anita (questionnaire, CV)
Petanovska-Ilievska, Biljana (questionnaire, CV)
Plaseska-Karanfilska, Dijana (questionnaire, CV)
Popović, Milka (questionnaire)
Stafilov, Trajče (questionnaire, CV, list of projects, references)
Stojanović, Mirjana (questionnaire, CV)
Šimat, Vida (questionnaire)
Škrbić, Biljana (CV)
Šubarić, Drago (questionnaire)
Torović, Ljilja (questionnaire)
Trajković -Pavlović, Ljiljana (questionnaire)
Vasiljević, Ivana (questionnaire)
Vinceković, Marko (questionnaire, CV)

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Institutions:

Albania

University of Tirana, Faculty of Natural Sciences, Tirana, www.fshn.edu.al (questionnaire: Department of Chemistry - Analytical Chemistry Section)

Croatia

Centre of Marine Studies, University of Split, Split, more.unist.hr (questionnaire)
Faculty of Agriculture, University of Zagreb, Zagreb, www.agr.unizg.hr (questionnaire: Department of Chemistry, Dairy Science Department)
Faculty of Food Technology, University of Josip Juraj Strossmayer, Osijek, www.ptfos.hr (questionnaire)
Faculty of Food Technology and Biotechnology, University of Zagreb, Zagreb, www.pbf.hr (questionnaire)
Faculty of Veterinary Medicine, University of Zagreb, Zagreb, www.vef.unizg.hr (questionnaire)
Institute of Agriculture and Tourism, Poreč, www.ipitpo.hr (questionnaire)
Institute of Public Health Dr. Andrija Štampar, Zagreb, www.stampar.hr (questionnaire)

Republic of Macedonia

Institute for Public Health of the Republic of Macedonia, Skopje, www.iph.mk (questionnaire)
Macedonian Academy of Sciences and Arts, Skopje, www.manu.edu.mk (questionnaire)
Faculty of Natural Sciences and Mathematics, Institute of Chemistry, Ss Cyrill and Methodius University, Skopje, www.pmf.ukim.edu.mk/PMF/Chemistry/Hemija.htm (questionnaire)
Faculty of Agricultural Sciences and Food, Food Institute, Department for Food Safety, Food Chemical Safety Laboratory, Ss Cyrill and Methodius University, Skopje, www.fznh.ukim.edu.mk, (questionnaire)

Serbia

A BIO TECH LAB, Sremska Kamenica, abiotechlab.com (questionnaire)
Faculty of Agriculture, University of Novi Sad, Novi Sad (questionnaire)
Faculty of Chemistry/Department for Biochemistry, University of Belgrade, www.chem.bg.ac.rs (questionnaire)
Faculty of Technology, University of Novi Sad, Novi Sad, www.tf.uns.ac.rs
Institute for Field and Vegetable Crops, Novi Sad, www.nsseme.com (questionnaire)
Institute of Public Health of Vojvodina, University of Novi Sad, Novi Sad, www.batut.org.rs (questionnaire: Centre for Hygiene and Human Ecology 1 & 2, Department for Nutrition and Food Safety, Center of Microbiology - Department for Sanitary Bacteriology)

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FP7 Center for Food Safety and Emerging Risks (CEFSER)

is opened for collaboration with every interested

researchers and institutions:

E-mail: ***biljana@tf.uns.ac.rs***

Thank you for your kind attention!