

***REP LECOTOX 2nd WORKSHOP***  
Programme and Abstracts

# **TRENDS IN ECOLOGICAL RISK ASSESSMENT**

21 – 23 September 2009

# Programme

## Monday 21 Sept 2009

**11:00 - 11:45** Opening  
**Slavka Gajin**, acting Dean of UNSFS  
**Radmila Kovačević**, REP LECOTOX Co-ordinator  
**Ivana Teodorović**, Workshop Organizing Committee

### SECTION 1: RISK ASSESSMENT OF CHEMICALS WITH SPECIAL ATTENTION TO REACH

**11:45 - 12:30** KEY NOTE LECTURE: **Integrated approaches to the evaluation of the human and ecological risks – case of POPs – How we can use data from monitoring for risk assessment?** **Ivan Holoubek**, RECETOX, Masaryk University, Brno, Czech Republic

**12:30 - 13:30** Lunch break

#### 1. A. Legislative aspect

**13:30 - 14:15** Regulatory Need for Integrated Risk and Health Impact Assessment – Current Approaches and New Directions, **Dimosthenis Sarigiannis**, Institute for Health and Consumer Protection European Commission - Joint Research Centre, Ispra, Italy

**14:15 - 15:00** New Legislative Framework on Chemicals Management and Risk Assessment in Serbia, **Katarina Krinulović**, Ministry of Environment and Spatial Planning, Chemicals Department, Belgrade, Serbia

**15:00 - 15:30** Coffee break

#### 1. B. Emerging substances and nanomaterials: analysis, environmental fate, effects, ERA

**15:30 - 16:00** Assessment of endocrine disruptive potential of complex pollutant mixtures in river ecosystems, **Klára Hilscherová**, RECETOX, Masaryk University, Brno, Czech Republic

**16:00 - 16:30** Assessment of emerging contaminants in municipal wastewaters – a transition country perspective, **Marijan Ahel**, Institute Rudjer Boskovic, Zagreb, Croatia

**16:30 - 17:00** Two invited WS participants - short oral presentations  
**The expression of CYP1A and metallothionein in hepatopancreas of *Merluccius merluccius* and *Mullus barbatus* from the Adriatic sea**, **Mirjana Mihailović**, Department of Molecular Biology, Institute for Biological Research "Siniša Stanković", Belgrade, Serbia  
**Comparison of the action of single PBDE congeners and mixtures on ovarian steroid secretion. An irreversible effect on progesterone secretion**, **Ewa L Gregoraszczyk**, Department of Physiology and Toxicology of Reproduction, Institute of Zoology, Jagiellonian University, Kraków, Poland

**17:00-18:00** Discussion

Dinner reception (at the Conference Venue, right after the last session)

## Tuesday 22 Sept 2009

### SECTION 1: RISK ASSESSMENT OF CHEMICALS WITH SPECIAL ATTENTION TO REACH (continued)

#### 1.C. Incorporating "Omic" Information into Risk Assessment and Policy

**9:00 - 9:45** Potential applications of system biology ('omics') for the regulation of chemicals and pharmaceuticals, **Stefan Scholz**, Department of Bioanalytical Ecotoxicology, UFZ, Leipzig, Germany

**9:45 - 10:30** Application of "Omic" technologies to monitoring, **Brett Lyons**, CEFAS, UK

**10:30 - 11:00** Coffee break

**11:00 - 12:00** Poster session

**12:00 - 13:00** Discussion

**13:00 - 14:00** Lunch break

### SECTION 2: ECOSYSTEM RISK ASSESSMENT

**14:00 - 14:45** KEY NOTE LECTURE: "From complex contamination to individual toxicants - Effect-directed analysis as an approach to unravel cause-effect relationships in polluted sediments" **Werner Brack**, Department for Effect-Directed Analysis, UFZ, Leipzig, Germany

#### 2. A. Aquatic ecosystems, ERA in WFD and GD

**14:45 - 15:30** Sediment and the WFD: a current and future perspective inspired by SedNet, **Jos Brils**, Deltares, Utrecht, The Netherlands

**15:30 - 16:00** Coffee break

**16:00 - 16:30** Effect-directed analyses (EDA) approach for identification of hazardous chemical contamination in the Sava River Basin, **Tvrtko Smital**, Institute Rudjer Boskovic, Zagreb, Croatia

**16:30 - 17:00** Nutrient pollution of surface waters and associated risks to ecosystems and human health (water blooms & cyanobacterial toxins), **Luděk Bláha**, RECETOX, Brno, Czech Republic

**17:00 - 17:30** Two invited WS participants - short oral presentations

**Excitatory amino acid beta-n-methylamino-l-alanine is a putative environmental neurotoxin, *Srdjan Lopicic***, Institute for Pathological Physiology, School of Medicine, University of Belgrade, Serbia

**Bioavailability and toxicity of chemical compounds in natural water, *Irina Blinova***, National Institute of Chemical Physics and Biophysics, Tallinn, Estonia

17:30-18:15 Discussion

18:30 City tour

## Wednesday 23 Sept 2009

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9:00-9:30 Special presentation: **NETWORKING dynamics: INCO NETS and ERA NETS under FPs, *Armand Beuf***, European Commission, Directorate-General for Research, Brussels, Belgium

9:30 – 9:45 Special short oral presentation: **FP6 INCO project NEUROIMAGE and its perspectives, *Pavle R. Andjus***, Center for laser microscopy, Faculty of Biology, University of Belgrade, Belgrade, Serbia

### SECTION 2: ECOSYSTEM RISK ASSESSMENT (continued)

#### 2. A. Aquatic ecosystems, ERA in WFD and GD (continued)

9:45 - 10:15 **Bioavailability of organic contaminants in aquatic environment, *Jussi Kukkonen***, Laboratory for Aquatic Ecology and Ecotoxicology, Faculty of Biosciences, University of Joensuu, Finland

10:15 - 10:45 Water quality in Vojvodina Region-recent screening of specific pollutants, ***Ivana Ivancev Tumbas***, Laboratory for Chemical Technology and Environmental protection, Department of Chemistry, UNSFS, Novi Sad, Serbia

10:45-11:15 Coffee break

#### 2. B. Special topic – up-scaling

11:15 - 11:45 **Risk assessment of toxicants and ecosystems: the challenge for understanding the reality, *Mikhail Beketov***, Department of System Ecotoxicology, UFZ, Leipzig, Germany

11:45 - 12:15 Invited WS participant - short oral presentation

**Freshwater ecosystems at risk and the consequences for human society: from microscale to macroscale, *Cristina Sandu***, Institute of Biology, Romanian Academy, Bucharest, Romania

12:15 - 13:00 Discussion

13:00 - 14:00 Lunch break

#### 2. C. Terrestrial ecosystem

14:00 - 14:30 **The role of ecological risk assessment in contaminated land management, *Joop J. Vegter***, TNO, The Netherlands

14:30 - 15:00 **Dredged sediments application on land, *Jakub Hofman***, RECETOX, Brno, Czech Republic

15:00 - 15.30 **Potential health risk assessment for soil heavy metal contamination in the central zone of Belgrade (Serbia), *Ivan Gržetić***, University of Belgrade, Faculty of Chemistry

15:30 - 16:00 Coffee break

16:00-16:30 **Responses of Amphibian Populations to Chemical Contaminants in Context with Other Stressors, *Val R. Beasley***, University of Illinois at Urbana-Champaign, USA

16:30 - 16:45 Invited WS participant - short oral presentation

**Application of microbial and plant tests in preliminary evaluation of risk for PAHs contaminated area, *Agnieszka Klimkowicz-Pawlas***, Institute of Soil Science and Plant Cultivation, Department of Soil Science and Land Conservation, Pulawy, Poland

16:45 - 18:00 Round table discussion and conclusions

End of the Workshop

## TOXIC EFFECTS OF DIAZINON AND ITS PHOTODEGRADATION PRODUCTS

Čolović M.<sup>1</sup>, Krstić D.<sup>2</sup>, Petrović S.<sup>1</sup>, Leskovac A.<sup>1</sup>, Savić J.<sup>1</sup>, Joksić G.<sup>1</sup>, Vasić V.<sup>1</sup>

<sup>1</sup> Department of Physical Chemistry, Vinča Institute of Nuclear Sciences, Belgrade, Serbia,

<sup>2</sup> Institute of Chemistry, School of Medicine, University of Belgrade, Belgrade, Serbia

The toxic effects of diazinon and its irradiated solutions were investigated using cultivated human blood cells (lymphocytes and erythrocytes) and skin fibroblast. Ultra Performance Liquid Chromatography (UPLC) – UV/VIS system was used to monitor the disappearance of starting diazinon during 115-minute photodegradation and formation of its by-products as a function of time. Dose-dependent AChE and Na<sup>+</sup>/K<sup>+</sup>-ATPase inhibition by diazinon was obtained for all investigated cells. Calculated IC<sub>50</sub> (M) values were 7.5x10<sup>-6</sup>/3.4x10<sup>-5</sup>, 8.7x10<sup>-5</sup>/6.6x10<sup>-5</sup>, and 3.0x10<sup>-5</sup>/4.6x10<sup>-5</sup> for fibroblast, erythrocyte and lymphocyte AChE / Na<sup>+</sup>/K<sup>+</sup>-ATPase, respectively. Results obtained for reference commercially purified target enzymes indicate similar sensitivity of AChE towards diazinon (IC<sub>50</sub>-7.8x10<sup>-5</sup>), while diazinon concentrations below 10mM did not noticeably affect Na<sup>+</sup>/K<sup>+</sup>-ATPase activity. Besides, diazinon and 2-isopropyl-6-methyl-4-pyrimidinol (IMP) induced increasing incidence of micronuclei (via clastogenic mode of action) in a dose-dependent manner up to 2x10<sup>-6</sup>M and significant inhibition of cell proliferation and increased level of malondialdehyde at all investigated concentrations. Although after 15-min diazinon irradiation formed products do not affect purified commercial enzymes activities, inhibitory effect of irradiated solutions on cell enzymes increased as a function of time exposure to UV light and resulted in significant reduction of AChE (up to 28-45%) and Na<sup>+</sup>/K<sup>+</sup>-ATPase (up to 35-40%) at the end of irradiation period. Moreover, photodegradation treatment strengthened prooxidative properties of diazinon as well as its potency to induce cytogenetic damage.

## DETERMINATION OF ECOLOGICAL STATUS OF PALIC LAKE (VOJVODINA, SERBIA) IN 2008

Elvira Pamer, Petar Knezevic, Danijela Kojic, Zeljko Popovic, Olga Petrovic,  
Gordana Grubor-Lajsic

University of Novi Sad Faculty of Sciences, Department of Biology and Ecology,  
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The ecological status of the Palic Lake (Serbia) was estimated by using both microbiological and biochemical methods. Samplings were done seasonally in June and October 2008 from two different sites of location. Determination of heterotrophic plate count (HPC) was carried out after plating appropriate dilution on Nutrient agar (260C, 72 h), while count of coliformes by using Endo agar (370C, 48h). Fluorogenic model substrates that release 4-methylumbelliferone (4-MU) after degradation were used to determine the phosphatase, esterase and β-glucosidase activity. The concentration of the reaction product was measured fluorimetrically (364 nm excitation, 445 nm emission). According to HPC (Kohl, 1975), water of the Palic Lake belonged to class II-III (10.675 CFU/ml) in June while class I-II (900 CFU/ml) in October. Total coliform bacteria (175 CFU/ml) were detected only during June. The phosphatase activity was higher in June (2469.69 nmol (L x h)<sup>-1</sup>) than in October (720.85 nmol (L x h)<sup>-1</sup>) whereas the esterase and glycosidase activity was higher in October than in June. There was correlation between the microbiological analysis and phosphatase activity values, indicating significant level of lake pollution during summer months.