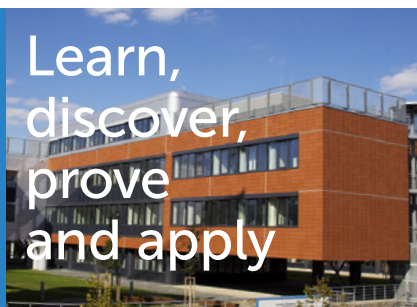




RECETOX NEWSLETTER

RECETOX NEWSLETTER is a quarterly newsletter by the Research Centre for Toxic Compounds in the Environment (RECETOX), Brno, Czech Republic.

Learn,
discover,
prove
and apply



RECETOX is an independent REsearch CENTre for TOXic Compounds in the Environment operating within the Faculty of Science, Masaryk University, Brno, Czech Republic. The Centre fulfils three roles: an academic institution providing university education, a research institution working on transformation of the research into practical applications and a body supporting implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs) and of sound chemicals management in general, nationally and internationally.

In this issue

- End of 2013 in RECETOX
- RECETOX around the globe
- Calendar for the first half of 2014



Foreword

Dear readers,

This issue of the newsletter looks back at the last quarter of 2013. It describes events and activities which did not have space to be shown in previous issues. The CETOCOEN project finished in December 2013, which fundamentally changed our Centre and built state of the art research infrastructure, significant in Central Europe. A five-year long sustainability period of the RECETOX Centre starts in 2014. We will also prepare a number of new projects and continue to seek additional opportunities to further develop our research at the national and international level.

And last but not least, let us wish for good health and a lot of research, project and personal success for all of 2014. We believe that our newsletter will remain to be a useful source of information for you in 2014.

Enjoy reading!

Katka Šebková, on behalf of the editors

PS - The RECETOX newsletter is also available automatically if registered through www.recetox.muni.cz or newsletter@recetox.muni.cz and exists in English, Czech and Russian. The next issue will be out in April 2014.

Laboratories of the Trace Analyses

Services:

- QA/QC system, validated analytical methods
- Modern equipment for extractions, fractionations and purification of samples
- State of the art instrumentation for analyses of endocrine disrupting chemicals, persistent organic pollutants, and heavy metals
- Speciation analyses of toxic and essential elements in the environment and biota
- Long term monitoring – air, precipitation, soil, water, sediments, needles, mosses and lichens
- Air monitoring networks – MONET in Europe, Africa and Asia
- Sampling by active and passive samplers
- Sampling of precipitation and surface waters, sediments, soils and biotic materials





End of 2013 in RECETOX

Alumni Day

Celebration of the 30th anniversary of RECETOX (the predecessor of the Centre was established on November 8, 1983) took place the week of November 18–22, 2013. One of the events was a special open door day for our former colleagues, Ph.D. students and all other research and industry partners, held on November 20, 2013. We celebrated with those who worked with us for shorter or longer periods, and thus directly or indirectly contributed to the development and successes of the RECETOX Centre.

Our guests visited the new RECETOX premises in A29, including laboratories, remembered the past through

historical photographs of people, projects and social activities organized in the Centre in previous decades, and met with colleagues that continue to work at RECETOX. A new video describing RECETOX in 2013 was screened for the first time. It was a very pleasant evening and we thank all participants for visiting us. We already look forward to another Alumni Day in the future.

The anniversary week was crowned by the 4th RECETOX traditional ball held in Musilka hall in Brno on November 22, 2013. Everyone dressed up and rocked-n-rolled, as 1960s were the main theme of the ball.



ELSPAC Study Participants Meeting

On December 13 and 14, 2013, the first meeting between families and individuals participating for 20 years in the European Longitudinal Study of Pregnancy and Childhood (ELSPAC) and research teams took place. The ELSPAC study was conducted in the Czech Republic from 1991–2011 and the RECETOX Centre took over the study in 2012. The rector of Masaryk University, Prof. Mikuláš Bek, opened the meeting in the premises of our Centre, where **157** study participants out of total **186** visitors came to learn about our Centre, its research and to meet the new ELSPAC team.

All visitors – participants, their relatives, partners, friends, interested researchers, and others – spent a half-day filled with presentations about the first results of the study, where the results are used, the sister project ALSPAC in Bristol, the importance of life-long research and how to develop the ELSPAC study in the future, including a new cohort. We were really pleased to hear that the majority of participants expressed willingness to continue in the study. In addition, some results of ELSPAC are already processed and are now available online. Come and visit the new visualization portal www.elspac.cz and sign up for the ELSPAC automatic information service.





Christmas in RECETOX

The traditional Christmas Party at the RECETOX Centre is a time and place for meeting colleagues, friends, as well as the next generation in our premises. The party took place on December 18th, 2013, and the children helped us decorate the tree using various laboratory materials and sang carols with the RECETOX Revival Band Orchestra. Naturally, all found a present under the Christmas tree. The parents also proudly used the opportunity to show the guests to the laboratories where they work.

In addition, a charity auction of RECETOX children's drawings was one of the most awaited points of the evening. The auction of drawings with a laboratory/research theme yielded **8000 CZK**, which we happily donated to the non-profit organization "Na počátku" that supports mothers and children in need. We would like to wholeheartedly thank to all – the young artists, the new owners of artwork as well as to all other contributors to and organisers of the charity fundraising at RECETOX!



Publicity of the Centre

In autumn, the RECETOX Centre was featured several times in the press (Brno Metropolitan in September, and the university newspaper in November and December). Czech Television broadcasted a few spots on the Centre's activities in connection with the ELSPAC longitudinal study meeting in December and the regional press also covered this event quite extensively. And last but not least, a new five-minute video describing the RECETOX Centre and its activities has enriched our website in the section "Information Materials". The video was filmed in the summer and autumn of 2013.

We will continue our publicity and public appearances throughout 2014 as well. Several open door days will be held between January and March and we will take part in the Exhibition of Research Centres of the South Moravian Region in the Urban Centrum in Brno in February 2014. In addition, we are preparing a long-awaited change in the appearance of the website of the Centre in mid-2014. As well, we anticipate making a set of shorter 1 minute videos on the research programmes of RECETOX.





International Cooperation

MONAIRNET Project – Cooperation with Austria



Research Centre
for Toxic Compounds
in the Environment



EUROPEAN UNION
European Regional
Development Fund



EUROPEAN TERRITORIAL CO-OPERATION
AUSTRIA-CZECH REPUBLIC 2007-2013
Gemeinsam mehr erreichen. Společně dosáhneme více.



The final conference of the MonAirNet project funded by the European Regional Development Fund through the European Territorial Cooperation (ETC) Austria - Czech Republic 2007-2013 for partners and representatives of regional and local governments was held at the Hotel Continental Brno on December 5, 2013.

The MonAirNet project monitors air quality and the cross border transport of toxic chemicals in the border regions of the Czech Republic and Austria using both the traditional and modern methods. Two new types of samplers were used in the project: a directional active sampler for monitoring the concentration of persistent organic pollutants in ambient air and a sampler for atmospheric deposition, which allow for the determination of prevailing sources or directional sectors that contribute to increased concentrations of toxic chemicals and serve to monitor temporal and spatial changes in their concentrations.

Higher levels of polycyclic aromatic hydrocarbons (PAHs), mostly from transportation or local heating, and of DDT in some localities were detected in the Czech Republic. DDT is revolatilized when working with arable land, as it was extensively used in the former Czechoslovakia as a plant protection product (pesticide). Pentachlorobenzene was detected in higher concentrations in Upper Austria, resulting from anthropogenic activities such as industrial production, or waste processing in landfills or waste water treatment plants.

More detailed information and results of the project are available on the website www.monairnet.eu.





A New Cooperation Agreement with University College London

Members of the ELSPAC team from RECETOX visited the Department of Epidemiology and Public Health at University College London in October 2013. They agreed to establish a long-term mutual cooperation between the two institutions, especially for the pilot phase of a new

long-term project of our Centre – CELSPAC cohort studies: the new generation – the study of exposome, factors affecting pregnancy, childbirth and the subsequent growth and development of the child. The new study builds on ELSPAC and will be launched in 2014.

RECETOX in Brussels

By the invitation of Dr. Ladislav Miko, Deputy Director General for Food Chains within the European Commission Directorate-General Health and Consumer Protection (DG SANCO), the Centre lectured in a traditional series of “Knowledge Hours” talks on December 4, 2013. The event took place at the headquarters of DG SANCO in Brussels, Belgium. Professor Jana Klánová spoke on the challenges of the new European Horizon 2020 programme and on the relationships and links between food, environment and health in research. This Knowledge

Hour attracted the attention of more than 100 senior European officials and was also simultaneously transmitted to other Commission’s offices in Brussels and to the European Food Safety Authority (EFSA) in Parma. The lecture was followed by more than an hour long lively discussion about the importance of multidisciplinary research, linking data on the state of the environment with epidemiological data and on general access to and availability of information for evidence-based decision-making at all levels.



RECETOX News

- ▶ The minister of Education, Youth and Sports of the Czech Republic, Mr. Dalibor Štys, gave awards to outstanding students and graduates in Prague on November 21, 2013. We are proud to announce that Dr. Veronika Štěpánková, Ph.D., from our Centre received an award for success in her doctoral studies in biochemistry, research program protein engineering. Congratulations!
- ▶ We are happily announcing the arrival of another member of the new generation of our young scientists. Congratulations to Veronica Mlčáková to the pre-Christmas birth of her son Maxmilián.



RECETOX activities abroad

Sampling in Geneva

The RECETOX Centre organized a week long sampling of persistent organic pollutants in the air of the main conference hall of the Geneva International Conference Centre (CICG) by passive samplers during the Conference of the Parties to the three conventions in cooperation with the Secretariat of the Stockholm Convention on POPs in May, 2013. The sampling aimed at increasing the visibility of global POPs monitoring efforts and determination of the chemicals present indoors. The air samples were analyzed in RECETOX laboratories. The results show that the content of polybrominated diphenyl ether flame retardants (PBDEs) in the Conference Centre was comparable to long-term levels in indoor environments in the



Czech Republic. PBDEs release into the indoor environment by evaporation from products and materials (i.e., ventilation equipment, furniture, electronics), where they are used to reduce flammability, or by re-mobilization from synthetic materials used indoors (i.e., textiles, plastics). Details are available on our website.

On the basis of this cooperation, the UNEP has requested a one-year long sampling at its Geneva premises – the International Environment House (IEH). The sampling is still ongoing; the aim is to determine levels of brominated and fluorinated organic pollutants and aromatic hydrocarbons in its offices and meeting rooms.



RECETOX Application: Waste Water Treatment by Algae in Africa

A collaborative project within the ACP Science and Technology Programme framework between EU countries (Italy, the United Kingdom and the Czech Republic) and three African countries finished in summer 2013. The project originally aimed to develop a sustainable source of biomass for energy use so that its cultivation saved space for growing food. Algae were chosen as one of the possible sources of biomass. Professor Blahoslav Maršálek from our Centre was involved in the project as algal biotechnology supervisor and a leader of the team that prepared the e-learning course for further dissemination of the technology used in Ghana, Namibia and South Africa to other countries. “Upon discovery that subsequent processing of the algal biomass exceeds economic and ener-

getic feasibility, this output has not been investigated further. On the other hand, the project still brought a significant outcome, in particular for the waste water treatment by algae, who remove pesticides, pharmaceuticals and estrogens from water as their food and do not produce greenhouse gases and methane; on the contrary, they consume carbon dioxide,” says Prof. Maršálek.

Consequently, the new biotechnology that has been developed and optimized for African conditions is able to treat wastewater at lower cost than conventional technologies used in wastewater treatment facilities – an infrastructure not readily available in all of the involved countries. For more information about the project see “Application” in the menu of the RECETOX website.

45 Days at Sea – Chemical and Biological Research in the West Atlantic Ocean

The Woods Hole Oceanographic Institution (WHOI) organized a research cruise DeepDOM along east coast of the South America, from Uruguay to Barbados, in spring 2013 (see map). Seven US universities, WHOI and RECETOX conducted research in the internation-

al waters of the Atlantic Ocean. Research focused on changes in the composition of dissolved organic matter in deep and medium-deep water masses (North Atlantic Deep Water, Antarctic Bottom Water, and Antarctic Intermediate Water), interactions between



processes on the surface and under the surface, and on the movement of water and organic matter between the ocean masses. In addition, researchers looked at the microbial diversity and ecological functions, including the metabolic activity.

Dr. Roman Prokeš from RECETOX travelled aboard a U.S. Navy ship R/V Knorr as the night shift leader for 9000 miles in 45 days. In addition to his work duties in that function, he sampled and analyzed surface ocean waters for artificial sweeteners, polar pesticides, steroid hormones, alkyl phenols, perfluorinated compounds and hexabromocyclodecanes at 24 sampling sites of the research cruise.

“A day aboard meant for me a sample extraction for 13 hours and work on a ship within my shift from midnight to 8 am

Sampling the Ganges River

Air and water were sampled in the basin of the Ganges River in the international project INDOPOP, in cooperation of RECETOX, NIVA (Norwegian Institute of Water Research) and TERI (The Energy and Resources Institute, New Delhi, India) in April and May 2013. The project aims at understanding the sources of persistent organic pollutants and their time/temperature-related shifts in the river and in its vicinity (in air) at nine locations. RECETOX contributed to the project through its long experience in sampling POPs in various environmental matrices by using various means – passive air samplers and active samplers for water, and atmospheric deposition samplers. *“Our job was to help Indian partners to deploy passive air samples, deposition samples, and collect water samples. In addition, we needed to convey techniques on how to ensure cleanliness and low contamination of background samples collected. Our Indian colleagues do have a long experience with water sampling, but never sampled for persistent organic pollutants. It is around 40 °C during the day here. As the sampling requires around 5–7 hours on a boat in the*

each day. This included task allocation to colleagues to ensure sampling at a given time and quality, so I was normally awake for 23–26 hours. Despite the fact that stops and sampling at stations usually took 8–72 hours, the ship keeps on moving all the time,” describes Prokeš. *“Catching up on sleep was only possible while moving between the locations, unless a research workshop or fire exercises with mandatory participation in neoprene and a life jacket every 2–3 days took place.”*

Cooperation with other institutions continues (such as University of Rhode Island), as additional air and ocean water samples have been shipped to our laboratories for analyses.

middle of the river, the main challenge is the heat, direct sun and handling the equipment in a small open wooden row boat without tipping it over”, said Lisa Melymuk who participated in India on behalf of the RECETOX.





RECETOX research infrastructure provides OPEN-ACCESS to Czech and international researchers. Visit www.recetox.muni.cz/RI for the application procedure. For more information, please contact Dr. Petra Růžičková, infrastructure coordinator (ruzickova@recetox.muni.cz)



Calendar of events until mid 2014

- January 14–17, 2014, **10th meeting of the Group on Earth Observation (GEO-X)**, Geneva, Switzerland
- January 19 and 21, 2014, **Open Door Days**, Faculty of Science, Brno, Czech Republic
- January 19–24, 2014, **Final meeting of the ArcRisk project and a ministerial conference Arctic Frontiers 2014**, Tromso, Norway
- February 3–4, 2014, **RECETOX trains in CETESB**, Sao Paulo, Brazil
- February 3–14, 2014, **Sample preparation of environmental pollutants** – training course in Bosnia Herzegovina
- May 5–11 2014, **Study tour of Turkish experts to RECETOX**
- May 11–15, 2014, **SETAC Europe**, Basel, Switzerland
- June 23–28, 2014, **10th International Summer School on Toxic Compounds**, RECETOX, Brno

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RECETOX newsletter is published and electronically distributed by the RECETOX, Kamenice 753/5, Brno, 62500, Czech Republic, www.recetox.muni.cz; if interested in receiving the newsletter automatically, please let us know here: newsletter@recetox.muni.cz. This is also a contact to express your views and ideas.

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Publication of this RECETOX newsletter has been supported by the CETOCOEN project and by Ministry of Environment of the Czech Republic.

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