

Conference Report



15th EuCheMS International Conference on Chemistry and the Environment – ICCE 2015

Leipzig, 20–24 September 2015

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The 15th EuCheMS International Conference on Chemistry and the Environment (ICCE 2015) took place 20–24 September in Leipzig, Germany. The ICCE is a biennial conference organized by the Division of Chemistry and the Environment (DCE) of the European Association of Chemical and Molecular Sciences (EuCheMS). The ICCE 2015 was hosted by the Division of Environmental Chemistry and Ecotoxicology of the German Chemical Society. Two major environmental research institutes in Leipzig supported the organization of the ICCE 2015: UFZ, Helmholtz Centre for Environmental Research, and TROPOS, Leibniz Institute for Tropospheric Research. The Organizing Committee consisted of the following members: **Thorsten Reemtsma** (UFZ, conference president), **Lukas Wick** (UFZ), **Hartmut Herrmann** (TROPOS), **Santiago Luis** (chair DCE, Spain), **Walter Giger** (Switzerland) and **Gerhard Lammel** (Germany and Czech Republic). The main conference venue was at the Augustusplatz Campus of Leipzig University. The satellite events took place at the Leipziger Kubus at the UFZ. Both venues offered very well suited facilities (lecture halls, foyer for posters and exhibition stands, food and refreshment facilities, etc.). We would like to thank all the people involved in the efficient and smooth local organization. Leipzig University is gratefully acknowledged for hosting the ICCE 2015 in the beautiful city campus and for generously making available a superb conference environment. We also thank for the financial support by the Division of Analytical Sciences of the Swiss Chemical Society.

The conference was attended by 435 registered participants from 44 countries from all continents.

The ICCE 2015 provided a unique communication and discussion platform for environmental scientists with emphasis on chemistry and ecotoxicology.

Of particular success were the five satellite events that took place before or after the conference. Five timely topics were addressed by these satellite events:

- Wastewater-based epidemiology
- E-Wastes
- High-resolution imaging and correlative analyses in life sciences down to sub nanometre scale
- Combining strategies and tools to identify priority chemicals in the environment
- Unconventional gas and oil production employing hydraulic fracturing

The conference was opened by **Beate Schücking**, the Rector of Leipzig University, and by **Georg Teutsch**, the Director of UFZ. **Avner Vengosh** from Duke University, USA, delivered the opening lecture on ‘An overview of the risks to water resources from unconventional energy exploration and hydraulic fracturing’.



Avner Vengosh lecturing on environmental risks of fracking.

Three Plenary Keynotes were delivered by highly reputable experts in their respective fields:

- **Janet Hering**, Eawag, Switzerland: ‘Water quality and the urban water cycle: Moving towards sustainable solutions’
- **Jerald F. Schnoor**, University of Iowa, USA: ‘Water sustainability and climate change’
- **Hartmut Herrmann**, TROPOS, Germany: ‘Atmospheric chemistry: Recent findings in gas phase, aerosol and multiphase studies’

During three weekdays of plenary and parallel sessions, 116 lectures and 220 posters were presented. The sessions were introduced by 15 invited speakers covering the following themes:

- Emerging contaminants
- Analytical methods for trace analysis
- Water quality, wastewater treatment and reuse, drinking water
- Microplastics
- Air pollution chemistry
- Soils and bound residues
- Multimedia partitioning, transport and modelling
- Isotope techniques and applications
- Predicting compound properties and effects
- Biological effects of chemicals
- Human exposure and toxicity
- Chemical risk and regulatory issues
- Metals, metalloids and elemental speciation
- Nanomaterials: from characterization to risk assessment
- Tropospheric multiphase and heterogeneous chemistry
- Biodegradation of chemicals in natural and man-made ecosystems

Nine companies presented their recent developments and services in the field of environmental and analytical chemistry.

The participants’ responses were very positive. ICCE 2015 was considered a great success, enabling the exchange of a lot of very valuable information through a high-level scientific programme and many fruitful discussions that helped to significantly enlarge scientific and personal networks.

Some Highlights

Many presentations dealt with organic contaminants that are of concern because they are able to partition into soil and sediment and to accumulate in fish or humans. However, from the several tens of thousands of organic chemicals on the market, not all are potential long-term environmental contaminants. Therefore, it is an important, but challenging task to identify those that are of high priority and deserve detailed investigations. This issue was addressed at the ICCE 2015 by three contributions, reporting the key findings from a large collaboration effort between different research groups tackling the problem from different viewpoints. Within the framework of the satellite event on combining strategies and tools for identifying priority chemicals in the environment, **Martin Scheringer**, ETH Zurich, Switzerland, presented a modelling approach for screening large data sets for chemicals exhibiting physical-chemical properties and degradation behaviour of environmental concern. The authors applied a multi-media fate model and were able to identify 2'550 out of 9'190 chemicals with high affinities to soil or sediment.

Aurea Chiaia-Hernandez, Eawag, Switzerland, reported on the applicability of this conceptual approach to identify potential long-term environmental contaminants. She searched for suspect chemicals in soil and sediment using state-of-the-art screening techniques based on high-resolution mass spectrometry. Their next target is to quantify these substances in soil and sediment to verify the model predictions. **Daniel Wächter**, Agroscope, Switzerland, presented the applicability of this approach within long-term monitoring programs on soil pollutants.

A different aspect of organic contaminants in the environment was investigated by **Thorsten Hüffer** and his co-workers from the University of Vienna, Austria. The focus in their study was on the sorption behaviour of organic contaminants on microplastics, which is an important process as it may affect the compound distribution in sediments and aqueous phases. They investigated whether there are relevant interactions between organic compounds and microplastics and how these interactions depend on the polymer composition.

Margaretha Adolfsson-Erici, Stockholm University, Sweden, studied the potential for microplastic pollution to interfere with the bioaccumulation of persistent hydrophobic chemicals. She challenged the indications found in some literature studies, suggesting that ingestion of plastics could increase bioaccumulation of chemicals. The modelling studies performed by the Swedish researchers indicate that ingestion of plastic that has the same fugacity or activity of chemicals as its surrounding environment will have a negligible impact on bioaccumulation. Furthermore, plastic could even act as a pathway for the elimination of chemicals from aquatic biota. **Matthew MacLeod**, Stockholm University, Sweden, presented the results of their laboratory experiments, in which they studied this issue and discussed the difficulties in assessing this problem.

Roundtable Discussion on 'Past, Presence and Future of Publishing in Environmental Sciences'

This event was organized during lunch and was well attended. Moderators were **Walter Giger** and **Gerhard Lammel**.

Three panel members introduced the subject:

- **Philippe Garrigues**, University of Bordeaux, France, Editor-in-Chief of *Environmental Science and Pollution Research*, Springer Nature Publisher
- **Ulrich Pöschl**, Max Planck Institute for Chemistry, Germany, Chief Executive Editor of *Atmospheric Chemistry and Physics*, European Geosciences Union
- **Jerry Schnoor**, University of Iowa, USA, former Editor of

Environmental Science and Technology, American Chemical Society.

Among other issues the following topics were discussed:

- Reasons for publishing
- More papers than ever
- Incremental papers versus full stories
- Choice of journals
- Impact of Impact Factors and other bibliometric data
- Reviewing the peer review system
- Open access publishing



DCE Career Award 2015 winner Karlheinz Ballschmiter.

Awards

Karlheinz Ballschmiter, Professor Emeritus of Ulm University, Germany, received the **DCE Career Award 2015** for his excellent scientific and teaching activities in environmental chemistry. The awardee was particularly successful with his work on polychlorinated biphenyls (PCB) as environmental contaminants. He presented an interesting retrospect on his highly productive career.

The **Paul Crutzen Prize 2015** was awarded to **Sebastian Scheinhardt** from the institute TROPOS for his publication on the impact of climate change on air quality in Dresden, Germany. This excellent publication was part of the thesis of Sebastian Scheinhardt at Leipzig University. He could estimate how climate change impacts the distribution and composition of particles.



Paul Crutzen Prize 2015 winner Sebastian Scheinhardt with ICCE 2015 president Thorsten Reemtsma.

Outlook

A special issue of the journal *Environmental Science and Pollution Research* will be published based on the presentations at ICCE 2015. Further details see: <http://www.icce2015.org>

The 16th ICCE will take place in Oslo, Norway, 18–22 June 2017, hosted by the Norwegian Chemical Society. The ICCE 2017 will be presided by **Rolland Kallenborn**, the Norwegian delegate to the EuCheMS Division of Chemistry and the Environment. <http://www.icce2017.org>

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