cefic

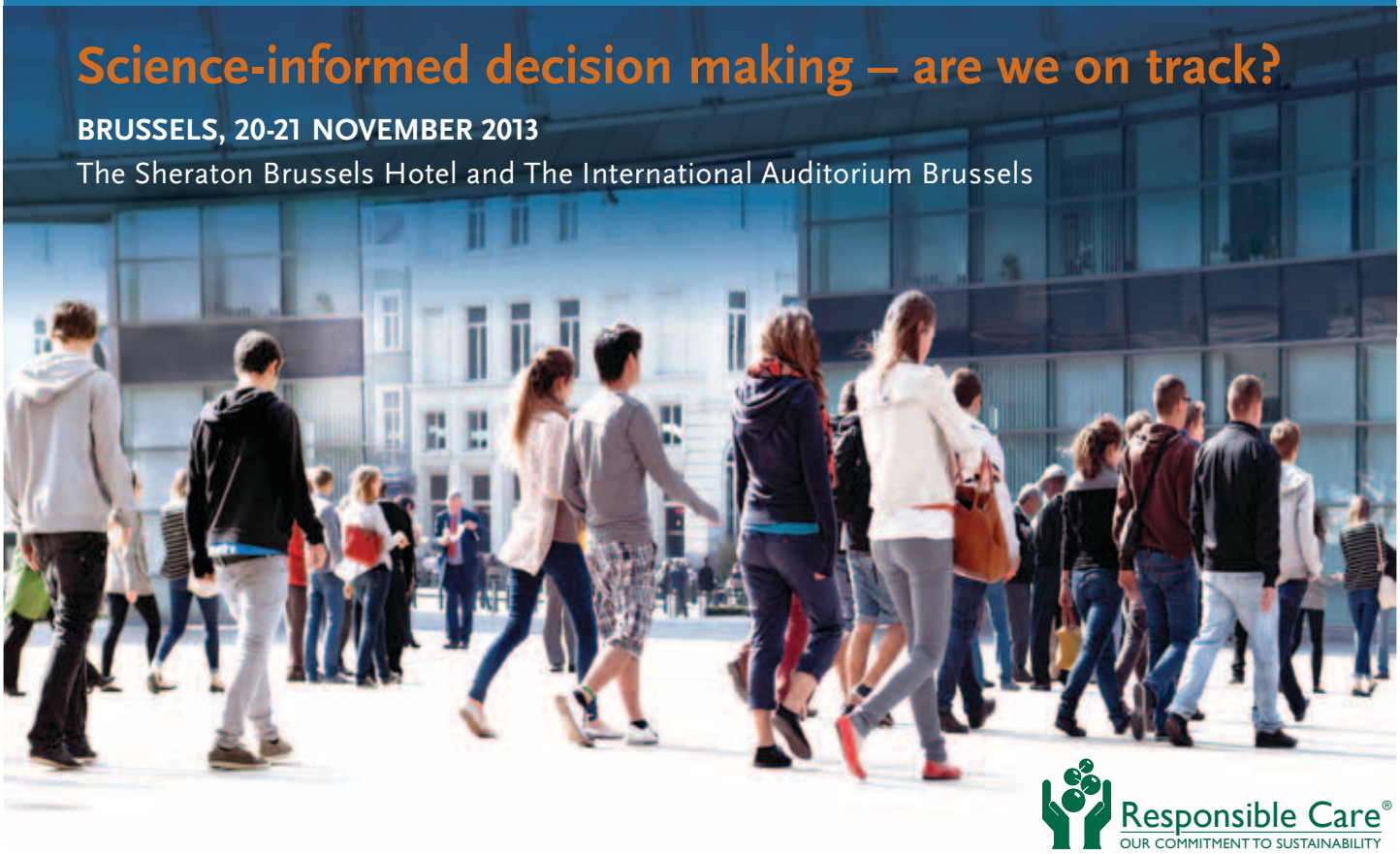
LRI
Long-Range
Research Initiative

15th Cefic-LRI Annual Workshop 2013

Science-informed decision making – are we on track?

BRUSSELS, 20-21 NOVEMBER 2013

The Sheraton Brussels Hotel and The International Auditorium Brussels



Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

LRI in brief

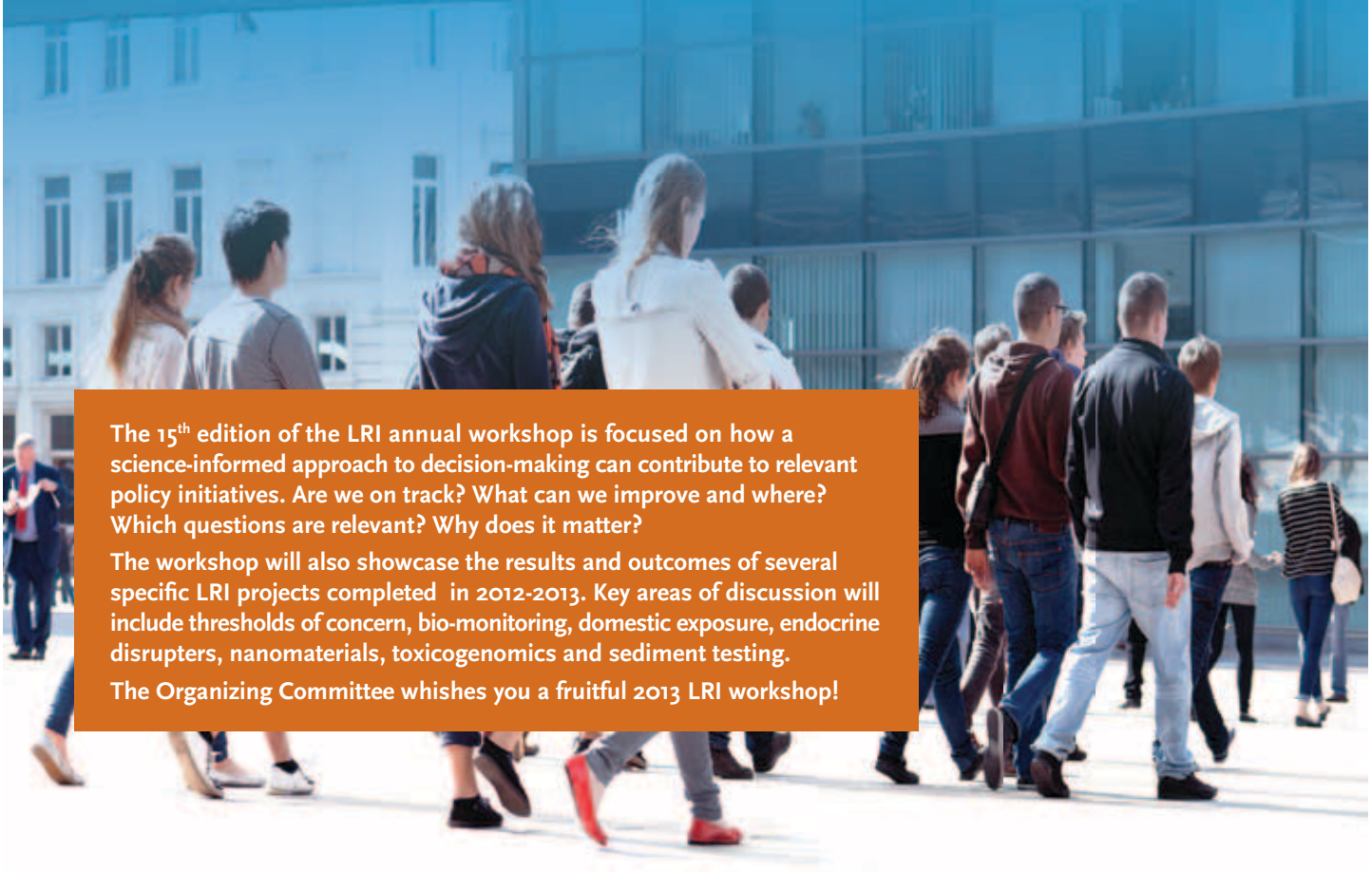
A major contribution to a sustainable chemical industry

Since 1999, the Long-range Research Initiative (LRI) Programme of Cefic, the European Chemical Industry Council, has been providing proactive scientific data on which the entire industry and regulatory bodies can draw to address societal concerns on a reliable basis.

As a fundamental basis for a sustainable chemical industry and a complement to Responsible Care, LRI presents a research programme that is forward-looking, ambitious but also realistic and coherent. LRI invests in long-term research and delivers transparent, quality-assured scientific data, open to the broad public.

The current research areas of the LRI are addressing key public concerns:

- Development of intelligent testing (including alternatives to animal testing)
- Understanding the effects of chemicals in complex environments
- Public acceptance of new technologies



The 15th edition of the LRI annual workshop is focused on how a science-informed approach to decision-making can contribute to relevant policy initiatives. Are we on track? What can we improve and where? Which questions are relevant? Why does it matter?

The workshop will also showcase the results and outcomes of several specific LRI projects completed in 2012-2013. Key areas of discussion will include thresholds of concern, bio-monitoring, domestic exposure, endocrine disrupters, nanomaterials, toxicogenomics and sediment testing.

The Organizing Committee whishes you a fruitful 2013 LRI workshop!

POSTERS

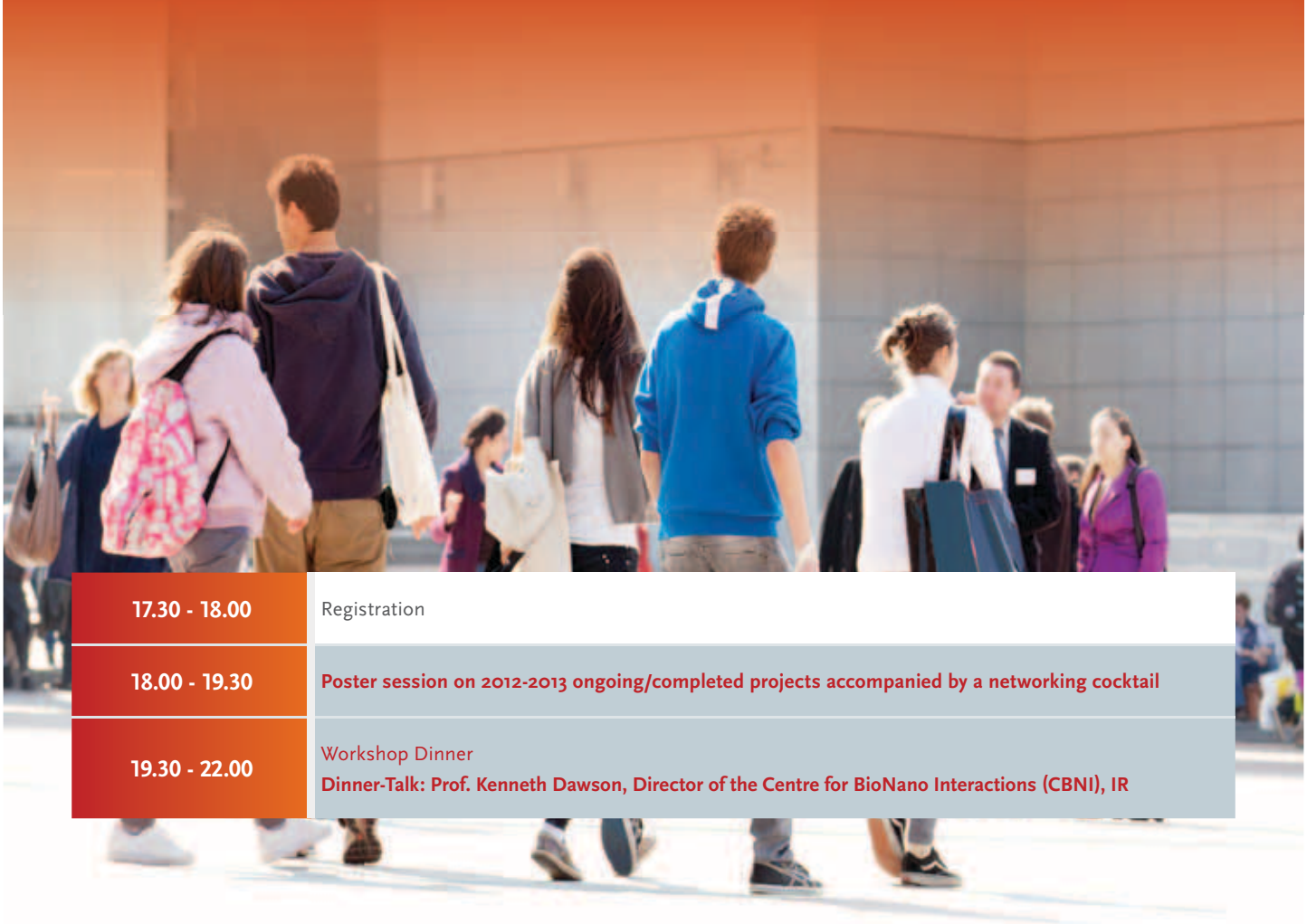
Balancing effort and benefit: Comparison of different Tiers for aggregate exposure modeling	Prof. Natalie von Goetz, ETH Zurich, CH
The DRESS project: DeRmal Exposure assessment Strategies	Dr. Rudi Torfs, VITO, BE
DIAMONDS Infrastructure in the DECO project: Comparing cheminformatics, HTS, in vitro and in vivo Omics and in vivo toxicity	Dr. Eugene van Someren, TNO, NL
Toxicity prediction in the DECO project: approaches for data analyses and toxicity assessment	Danyel Jennen, Department of Toxicogenomics, University of Maastricht, NL
Reference doses: does add-ing human data help?	Prof. David Jones, University of Leicester, UK
Testing mixtures of endocrine disruptors in vivo at human-relevant exposure levels	Dr. Karma Claire Fussell, BASF, DE

Mechanistic modeling of dermal penetration	Dr. Todd Gouin, Unilever, UK
Chimera: integrating risk assessment's building blocks	Prof. Frederik De Laender, RUG, BE
A foresight study on the introduction of new technologies: the case of nanotechnology	Dr. Steven Hankin, Institute of Occupational Medicine, UK
Interpreting micro-variability in urinary biomarkers	Dr. Roel Smolders, Flemish Institute for Technological Research, VITO, BE
TTCs for inhalation exposure – a new integrative grouping concept based on the RepDose databaseμ	Dr. Sylvia Escher, Fraunhofer Institute for Toxicology and Experimental Medicine ITEM, DE
The GreenFacts Initiative: providing factual and verified summaries of the key scientific reports related to health and the environment	Mr Jacques de Gerlache, Solvay, Manager of The GreenFacts Initiative, BE
Persistence testing at the sediment-water face: Results from OECD 308 and 309 studie	Dr. Kathrin Fenner, EAWAG, CH

PROGRAMME **DAY 1**

WEDNESDAY 20 NOVEMBER 2013

THE SHERATON BRUSSELS HOTEL
PLACE ROGIER 3, 1210, BRUSSELS



17.30 - 18.00	Registration
18.00 - 19.30	**Poster session on 2012-2013 ongoing/completed projects accompanied by a networking cocktail**
19.30 - 22.00	Workshop Dinner **Dinner-Talk: Prof. Kenneth Dawson, Director of the Centre for BioNano Interactions (CBNI), IR**

KENNETH DAWSON

Director of the Centre for BioNano Interactions (CBNI), IR

Kenneth Dawson is the Director of the Centre for BioNano Interactions (CBNI). The scientific focus of this Centre is to understand the interaction of nanoparticles with living systems (www.ucd.ie-cbni). The Centre seeks to identify the controlling factors in those interactions to support applications in nanotheraputics and nanosafety.

Professor Dawson is Chair of Physical Chemistry, Chairman of the National BioNanoscience Action, and co-ordinator of the European Infrastructure in the field of Nanoscience.

19.30 - 22.00

Dinner talk

Nanoscale interface between engineered matter and living organism: understanding the biological identity of nanosized materials and implications for nanomedicine.

Nanoscale materials can interact with living organisms in a qualitatively different manner than small molecules. Crucially, biological phenomena such as immune clearance, cellular uptake and biological barrier crossing are all determined by processes on the nanometer scale. Harnessing these endogeneous biological processes (for example in creation of new nanomedicines or nanodiagnostics) will therefore require us to work on the nanoscale. This ensures that nanoscience, biology and medicine will be intimately connected for generations to come, and may well provide the best hope of tacking currently intractable diseases.

PROGRAMME **DAY 2**

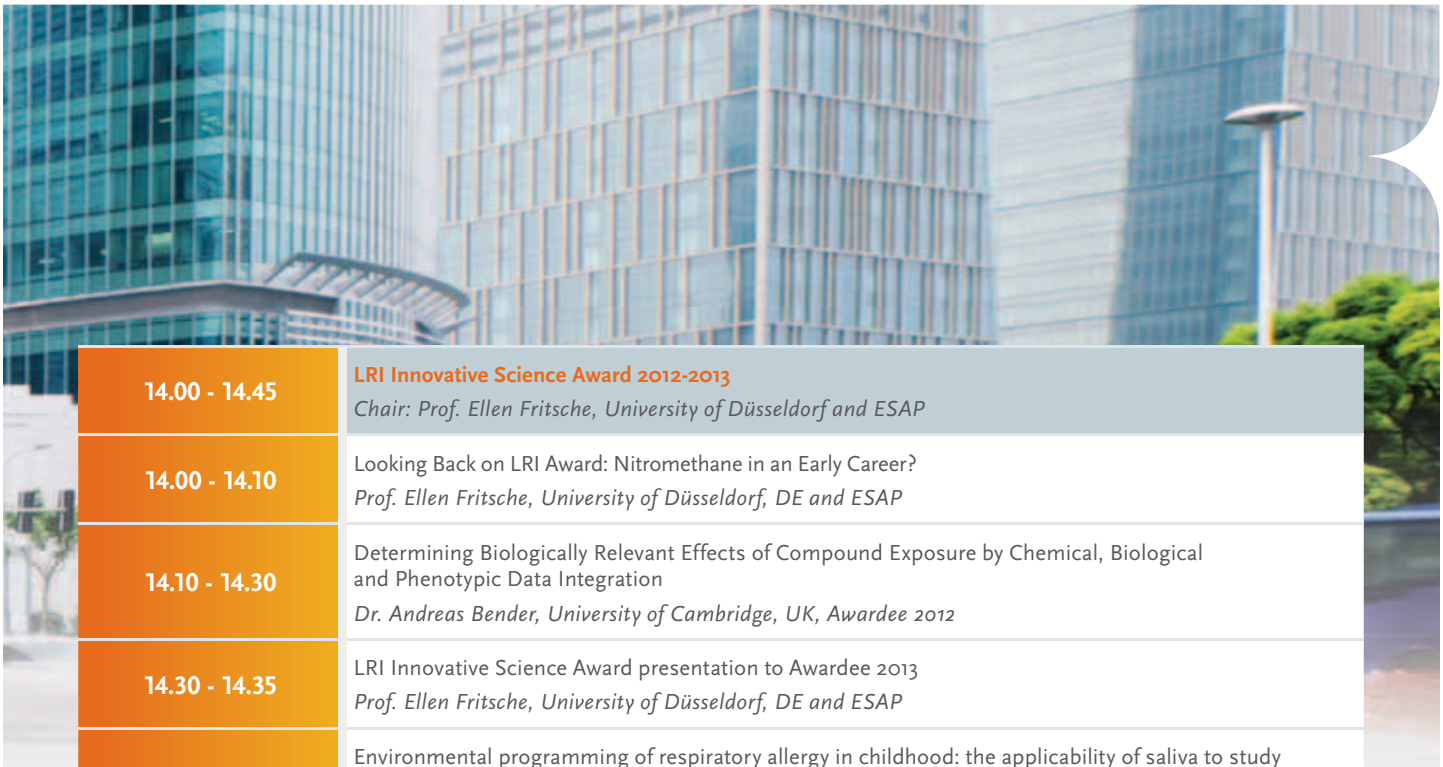
THURSDAY 21 NOVEMBER 2013

THE INTERNATIONAL AUDITORIUM BRUSSELS
BOULEVARD DU ROI ALBERT II 5, 1210, BRUSSELS

8.00 - 8.45	REGISTRATION AND WELCOME COFFEE
8.45 - 9.00	Welcome and outline *Dr. Stuart Marshall, Unilever, LRI SIG, BE*
9.00 - 9.10	Opening remarks *Dr. Hubert Mandery, Director General, Cefic, BE*
9.10 - 10.20	**Keynote session: What science for which questions?** *Chair: Dr. Stuart Marshall, Unilever, LRI SIG, BE*
9.10 - 9.20	A parliamentary perspective *Ms Julie Girling, Member of the European Parliament (video message)*
9.20 - 9.40	What science for which questions *Prof. Erik Lebret, IRAS, Utrecht University and RIVM, NL and ESAP*
9.40 - 10.00	Keeping your eye on the goal: avoiding conflicts, agendas, emotions and presumptions *Prof. Richard Sharpe, MRC Centre for Reproductive Health, The Queen's Medical Research Institute, University of Edinburgh, UK*
10.00 - 10.20	Where does science fit in innovation and safety for industry business decisions?
10.20 - 10.40	COFFEE BREAK

DAY 2 THURSDAY 21 NOVEMBER 2013

10.40 - 13.00	Plenary session: **LRI projects impact: focus on biomonitoring, thresholds and low dose, endocrine effects, toxicogenomics, and sediment testing** *Chair: Dr. Bruno Hubesch, Cefic, LRI Programme Manager, BE*
10.40 - 10.50	What is Normal in Santa Fe? *Prof. Greet Schoeters, University of Antwerpen and VITO, BE*
10.50 - 11.10	B6: Toxicogenomic Investigation into False Positive Responses in the Local Lymph Node Assay (LLNA) *Dr. Darrell Boverhof, Dow, US*
11.10 - 11.30	B8: New Threshold of Toxicological Concern (TTC) for inhalation exposure and derivation of thresholds with the database RepDose *Dr. Sylvia Escher, Fraunhofer Institute for Toxicology and Experimental Medicine (ITEM), DE*
11.30 - 11.50	AIMT2: Mechanism-based characterisation of toxicity for RepDose database substances: initial results on cytotoxicity and genomics *Dr. Rob Stierum, Netherlands Organisation for Applied Scientific Research (TNO), NL*
11.50 - 12.10	EMSG57: Critical review of epidemiological evidence for the potential association between endocrine active chemicals and obesity, diabetes and cardiovascular disease *Dr. Judy LaKind, LaKind Associates, LLC, US*
12.10 - 12.30	ECO17: Evaluation of test methods for measuring toxicity to sediment organisms *Dr. Noel Diepens and Prof Albert Koelmans, Wageningen University, Department of Environmental Sciences, Aquatic Ecology and Water Quality Management (WU-AEW), NL*
12.30 - 12.50	ECO16: Critical Body Residue Validation for Aquatic Organisms Exposed to Chemicals Causing Toxicity by Baseline Narcosis *Dr. Joop Hermens, Institute for Risk Assessment Sciences (IRAS), Utrecht University, NL*
13.00 - 14.00	BUFFET LUNCH



14.00 - 14.45	**LRI Innovative Science Award 2012-2013** *Chair: Prof. Ellen Fritsche, University of Düsseldorf and ESAP*
14.00 - 14.10	Looking Back on LRI Award: Nitromethane in an Early Career? *Prof. Ellen Fritsche, University of Düsseldorf, DE and ESAP*
14.10 - 14.30	Determining Biologically Relevant Effects of Compound Exposure by Chemical, Biological and Phenotypic Data Integration *Dr. Andreas Bender, University of Cambridge, UK, Awardee 2012*
14.30 - 14.35	LRI Innovative Science Award presentation to Awardee 2013 *Prof. Ellen Fritsche, University of Düsseldorf, DE and ESAP*
14.35 - 14.45	Environmental programming of respiratory allergy in childhood: the applicability of saliva to study the effect of environmental exposures on DNA methylation *Dr. Sabine Langie, VITO (Flemish Institute for Technological Research), BE, Awardee 2013*
14.45 - 15.10	COFFEE BREAK
15.10 - 16.45	**Evidence-based Science for Critical decisions** *Chair: Prof. Michael Siegrist, ETH Zurich, CH and ESAP*
15.10 - 15.40	Science in the regulatory process (REACH) *Dr. Norbert Bornatowicz, Senior Scientific Officer, ECHA, FI*
15.40 - 16.10	Science based policy making. Who does what (and why)? *Dr. Krzysztof Maruszewski, Director of JRC-IHCP, IT*
16.10 - 16.40	The Role of the Media in responsible Research and Innovation *Ms Erika Widegren, Executive Director, Atomium Culture, BE*
16.40 - 16.45	Conclusions & future perspectives *Dr. Bruno Hubesch, CEFIC Research and Innovation, LRI Programme Manager, BE*
16.45	Short evaluation & Close of Cefic-LRI Workshop 2013

CHAIR DR. STUART MARSCHALL

UNILEVER, LRI SIG, BE

Stuart joined Unilever's corporate Safety and Environmental Assurance Centre (SEAC) in Bedford, UK in 1983 after completing a BSc in Environmental Biology and a Ph.D in the fate and effects of organolead compounds in natural systems. His current role is Ecotoxicology Science Leader which includes responsibility for SEAC's internal and external environmental safety research programme. Stuart is Chair of the Cefic LRI Strategic Implementation Group and a member of the ECETOC Scientific Committee.

8.45 - 9.00

Welcome and outline

9.10 - 10.20

Keynote sessions

What science for which questions?

DR. HUBERT MANDERY

Director General, Cefic, BE

Hubert Mandery holds a degree in Organic Chemistry and Food Chemistry and a PhD from the Technical University of Karlsruhe. He started his career in 1986 at BASF in research and became Group Leader in the BASF Central Analytical Laboratory. In 1993 he was appointed Director Product Safety and promoted to Vice-President International Economic Affairs in 2000. In 2004 he became Senior Vice-President for Trade Policy and General Political Issues. From January 2007 to August 2009, he was Managing Director Business Centre South Africa and Sub-Sahara and Head of BASF South Africa. He joined Cefic (European Chemical Industry Council) in September 2009, and has been Director General of Cefic since November 2009.

9.00 - 9.10

Opening Remarks

JULIE GIRLING

Member of the European Parliament

2009 - Present: Elected Conservative MEP representing South West England and Gibraltar

Positions held:

Chief Whip of the Conservatives in the European Parliament
UK Spokesman for Agriculture
Member of the Agriculture Committee
Member of the Fisheries Committee
Member of the Environment, Public Health and Food Safety Committee

Member of the ASEAN Delegation for relations with South East Asia

2006 - 2009:	Lead Cabinet Member for the Environment – Gloucestershire County Council
2003 - 2006:	Member, South West Regional Assembly
2003 - 2006:	Leader, Cotswold District Council
2000 - 2009:	Elected Member Gloucestershire County Council
1999 - 2009:	Elected Member Cotswold District Council
1995 - 2009:	Freelance trainer.
1991 - 1993:	Marketing and Buying Manager, Boots/Halfords
1988 - 1990:	Marketing Manager, Dixon's Stores Group
1982 - 1988:	Buyer and Merchandise Controller, Argos Catalogue Group

9.10 - 9.20

A parliamentary perspective

PROF. ERIK LEBRET

IRAS, Utrecht University and RIVM, NL and ESAP

Erik Lebret Ph.D. is professor in Environmental Health Impact Assessment at the Institute of Risk Assessment Sciences (IRAS) at Utrecht University and Chief Scientist of the Division of Environment and Safety at the National Institute of Public Health and the Environmental (RIVM), Bilthoven, The Netherlands. Erik Lebret studied environmental health sciences at the University of Wageningen, where he also did his doctorate thesis on exposure to air pollution in the Dutch housing stock. In 1986, he spent a year as visiting research associate at the Harvard School of Public Health, on a fellowship of the Dutch Organisation for the Advancement of Science, working on errors and misclassification problems in exposure assessment and their effect on exposure-response relations. Over the years, he worked on a variety of environment and health issues and impact assessments in national and international projects.

9.20 - 9.40

What science for which questions

CHAIR PROF. RICHARD SHARPE

MRC Centre for Reproductive Health, The Queen's Medical Research Institute, University of Edinburgh, UK

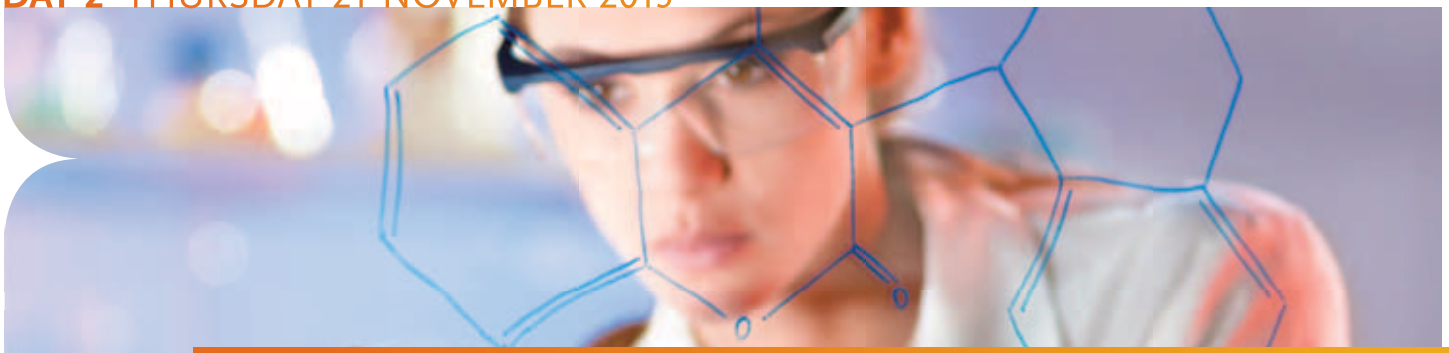
Richard Sharpe, heads a research programme on developmental disorders of male reproductive health in the MRC/University Centre for Reproductive Health in Edinburgh. His expertise and research interests cover sexual differentiation, development and puberty (and disorders thereof), fetal programming, endocrinology, the effects of lifestyle (smoking, obesity, diet, use of personal care products) and environmental chemical exposures on reproductive development and function. He is also interested in diet, obesity, inflammation and aging and how these intersect with reproductive health. He Co-chairs the Society for Endocrinology Special Interest Group on 'Endocrine disruptors'. He has published more than 300 papers and has served on numerous advisory bodies in Europe and USA.

9.40 - 10.00

Keeping your eye on the goal: avoiding conflicts, agendas, emotions and presumptions

10.00 - 10.20

Where does science fit in innovation and safety for industry business decisions?



DR. BRUNO HUBESCH

Cefic, LRI Programme Manager, BE

Dr. Bruno Hubesch obtained his Master degree in Nuclear Chemistry in 1980 and his PhD in Physical Chemistry in the area of Photochemistry in 1985 from the University of Louvain, Belgium. After service as non-commissioned officer in the Belgian Air Force, he pursued from 1987 to 1990 postdoctoral research as a Fulbright Scholar and NATO Science Fellow at the University of California, San Francisco at the Faculty of Medicine at the Veterans Administration Hospital. In 1990 he joined Procter & Gamble, Household Care R&D. In 2009 he joined in secondment CEFIC Research & Innovation as the LRI Programme Manager.

10.40 - 13.00

Plenary session

LRI projects impact: focus on biomonitoring, thresholds and low dose, endocrine effects, toxicogenomics, and sediment testing

PROF. GREET SCHOETERS

University of Antwerpen and VITO, BE

Greet Schoeters holds a Ph.D. in biology from the University of Antwerp. She is a program manager of environmental health at VITO (The Flemish Institute for Technological Research), a professor at the department of biomedical sciences of the University of Antwerp where she coordinates a master program on environment and health and she also holds a part time professorship at the University of Southern Denmark. She coordinates the Flemish human biomonitoring study (FLEHS) of the Flemish ministries of Environment and Health (2002-2015) and participated in the EU ESBIO and COPHES projects to design a European human biomonitoring program. While she was president of ESTIV (2008-2012), the European Society for Toxicology in Vitro, she supported initiatives for accelerating the transition to a toxicity pathway-based paradigm for chemical safety assessment as initiated by the EU AXLR8 project. She is a member of the scientific committee of the European Environment Agency.

10.40 - 10.50

What is Normal in Santa Fe?

DR. DARRELL BOVERHOF,

The Dow Chemical Company, US

Darrell Boverhof is a Toxicologist and Group Leader for the Cellular and Molecular Toxicology discipline within Dow's Toxicology & Environmental Research and Consulting (TERC) organization. He joined Dow in 2006 and is responsible for testing, research and consulting in the areas of molecular and predictive toxicology, immunotoxicology and nanotechnology. He has authored over 30 peer reviewed publications and book chapters in the area of toxicology in addition to recently co-editing a book on the application of toxicogenomics to risk assessment.

10.50 - 11.10

LRI-B6: Toxicogenomic characterization of sensitizer and false positive responses in the Local Lymph Node Assay (LLNA)

Recent publications have highlighted chemistries which yield false positive responses in the LLNA when compared with guinea pig and human data. A toxicogenomic approach was applied to provide insight into the molecular and cellular mechanisms that may explain and differentiate these responses. A total of X true sensitizers and Y false positives were evaluated in the LLNA for both proliferation and gene expression responses. Gene expression responses were analyzed to identify differential functional categories between sensitizers and false positives. The data were also used to develop gene expression-based molecular classifiers for distinguishing these classes. Overall the data suggest that sensitizers and false positives induce differential cellular and molecular responses in the lymph node and that molecular classifiers demonstrate good performance for distinguishing between true sensitizers and false positives in the LLNA.

DR. SYLVIA ESCHER

Fraunhofer Institute for Toxicology and Experimental Medicine (ITEM), DE

Since 2006 **Sylvia** is employed at the Fraunhofer Institute ITEM in Hannover where she is currently leading the group QSAR/database systems. Her main fields of research are structure activity analysis such as read across/category approaches as well as im-provement of risk assess-ment methodologies, for ex-ample. derivation of extrapo-lation factors. She is also re-sponsible for the develop-ment of the FhG database RepDose, which consists of repeated dose toxicity stud-ies mainly in rodents. She is married and has three children.

11.10 - 11.30

LRI-B8: New Threshold of Toxicological Concern (TTC) for inhalation exposure and derivation of thresholds with the database RepDose

The TTC concept derives thresholds to structural groups of compounds below which a risk for human health is not assumed. We present an integrative approach to derive threshold values for inhalation exposure. They are based on a dataset of 296 chemicals with repeated-dose toxicity studies (www.fraunhofer-repdose.de). Systemic and local NOEC values were discriminated. Groups of compounds with specific structural features (SF) were identified by using atom centered fragments (Kühne et al. 2009). Few SF were explicit for local or systemic activity indicating that this mode of action is not a determining factor. The structural and toxicological boundaries of the initial SFs were further evaluated considering differences in absorption, mechanism/metabolism and sensitive targets/effects observed in the in vivo studies. 28 SF groups resulted: 9 low (L) and 19 toxic (T) groups. About 20% of the compounds are, however, not yet grouped. Compared to the Cramer classes, the T and L-groups discriminate more precisely between low toxic versus toxic compounds. Two clearly distinguished TTC values are proposed.

DR. ROB STIERUM

Netherlands Organisation for Applied Scientific Research (TNO), NL

Dr. Rob Stierum is a senior scientist, a European Registered Toxicologist, and manager of the systems toxicology and bioinformatics activities at TNO. Rob coordinates the bioinformatics for the Netherlands Toxicogenomics Centre (NTC) project. He is also involved in several CEFIC projects (AIMT-2; AIMT-3) to explore the value of data mining and toxicogenomics for industrial purposes, and ZonMW ASAT projects on integration of human disease mechanistic data for exploration of (in vitro) systems toxicology data. He serves on the OECD Extended Advisory Group on Molecular Screening and Toxicogenomics. He has authored more than 50 publications in the areas of Carcinogenesis, DNA repair and genomics applied to toxicology.

11.30 - 11.50

LRI-AIMT2: Mechanism-based characterisation of toxicity for RepDose database substances: cytotoxicity and initial genomics results for lung (A549), liver (HepaRG) and kidney (RPTEC/TERT1) in vitro models

This project aims towards prediction of chemically-induced repeated dose toxicity, including potency, from in vitro toxicogenomics. The RepDose database was taken as starting point to select test chemicals. RepDose contains ~2200 rodent studies for 650 chemicals. Analysis of RepDose revealed that six targets, including liver and kidney, are most often affected at study Lowest Observed Effect Level. Therefore, this project focusses on cytotoxicity and genomics in in vitro models for liver (HepaRG) and kidney (RPTEC/TERT1), using target organ specific compounds. In addition, air exposed A549 lung cells are studied. Cytotoxicity data showed no association between in vivo NOEL and in vitro IC10 for liver and kidney toxicants. In contrast, for volatile compounds (formaldehyde, dimethylamine, acetaldehyde, isobutylene) tested in A549, potency was similar between in vivo NOEL and in vitro IC10, at least in terms of ranking. Gene expression analysis is being finalized and it is expected that initial results for A549 will be presented.

DR. JUDY LAKIND

LaKind Associates, LLC, US

Judy S. LaKind, Ph.D., President of LaKind Associates and Adjunct Assoc. Prof., Depts of Epidemiology and Public Health, U. Maryland School of Medicine and Pediatrics, Penn State U. College of Medicine, is a health and environmental scientist with expertise in risk assessment/management, exposure science, scientific/technical analysis for regulatory and litigation support and state-of-science reviews. Dr. LaKind has spoken and published extensively on risk-related issues, including children's chemical exposures, implications of uncertainty in risk assessment and environmental chemicals in human milk. She serves on the editorial boards of Journal of Toxicology and Environmental Health and Environment International and is an Associate Editor for the Journal of Exposure Science and Environmental Epidemiology.

11.50 - 12.10

LRI-EMSG57: Critical review of epidemiological evidence for the potential association between endocrine active chemicals and obesity, diabetes and cardiovascular disease.

This presentation describes our evaluation of the consistency and quality of epidemiological studies testing the hypothesis that BPA exposure is a risk factor for obesity, cardiovascular diseases (CVD) and diabetes mellitus (DM). Papers were summarized with respect to methods and results with particular attention to study design and exposure assessment, cited as the main areas of weakness in BPA epidemiologic research. Nearly all studies used a cross-sectional design and a single measure of BPA, which may result in exposure misclassification. For all outcomes, results across studies were inconsistent. Study design issues severely limit our understanding of potential health effects associated with BPA exposure. Based on epidemiology evidence, assertions about causal links between BPA and obesity, CVD or diabetes are unsubstantiated.

DR. NOEL DIEPENS AND PROF. ALBERT KOELMANS

Wageningen University, Department of Environmental Sciences, Aquatic Ecology and Water Quality Management (WU-AEW), NL (TNO), NL

Noël Diepens acquired her Ph.D at the Aquatic Ecology and Water Quality Management Group at Wageningen University in The Netherlands. She also has a Bachelor degree in Aquatic Ecotechnology from the Applied University of Zeeland and a Master's degree in Aquatic Ecology and Water Quality Management from Wageningen University. During her Master's studies, she focused deeply on ecotoxicology, especially tropical ecotoxicology, toxicokinetics and dynamics modelling. Her current research focuses on sediment toxicity tests in the context of prospective risk assessment. This work includes microorganisms, macrophytes and benthic invertebrates in fresh, estuarine and marine systems on different levels of biological organisation. Recently, a review on this topic has been published in Critical Reviews in Environmental Science and Technology.

Albert Koelmans is a professor of Water and Sediment Quality at Wageningen University (NL). He has about 25 years of experience on topics such as sorption, bioavailability and bioaccumulation, food web accumulation studies, nanoparticles and marine plastics. His group is known for innovative research on passive sampler development (e.g., polyoxymethylene samplers), role of black and activated carbon in sediment remediation, and nanoparticle fate and effect studies. Recent work addressed the occurrence of microplastics in marine species and model tools to assess the possible role of plastics as a carrier for chemicals. For CEFIC, Bart coordinates a project looking at the development of sediment toxicity tests, with a special emphasis on read across between species by means of smart test designs and model tools.

12.10 - 12.30

LRI-ECO17: Evaluation of test methods for measuring toxicity to sediment organisms

There is a lack of cost-effective and widely accepted methods to assess potential effects on microorganisms, vascular plants and animals across taxonomic groups, as well as methods to translate results of such tests between ecosystems (fresh water to marine) and to the population and community levels. Therefore, there is a need to develop efficient sediment tests and interpretation frameworks accounting for effects that cover different trophic levels, taxonomic groups and exposure pathways, and that allow for read across as much as possible. Aim of the ECO17 project was to improve or develop such tests and incorporate them in a revised design for risk assessment and regulatory guidance. The presentation will provide an overview of macrophyte, invertebrate, and microorganism test results, which will be linked to regulatory guidance and risk assessment.

DR. JOOP HERMENS

Institute for Risk Assessment Sciences (IRAS), Utrecht University, NL

Joop Hermens is associate professor at the Institute for Risk Assessment Sciences, Utrecht University. The research of his group is focused on getting a more thorough understanding of exposure to and bioavailability of organic contaminants in the environment. More recent research topics include exposure assessment in vitro studies with a focus on classical contaminants as well as emerging pollutants such as pharmaceutical pollutants.

12.30 - 12.50

LRI-ECO16: Critical Body Residue Validation for Aquatic Organisms Exposed to Chemicals Causing Toxicity by Baseline Narcosis

There are a number of advantages for using internal effect concentrations instead of metrics for toxicity and effects based on concentrations external to the organism such as the LC50 or NOEC. The use of an internal measurement, such as in critical body residues (CBRs), removes the influence of the uptake quantity. The CBR approach has gained acceptance in the scientific and regulatory communities because it is supported by a solid theoretical basis and there it is considerably practical in its application for risk assessment. In this ECO-16 project, we have developed guidance for interpreting existing CBR-based toxicity test data and also worked on the refinement of CBR data interpretation. Specific attention was given to the potential effect of differences in internal distribution of the observed variability in CBR data between chemicals and species. One of the major aims was to apply models for the interpretation and prediction of CBR data.

PROF. ELLEN FRITSCHE

University of Düsseldorf, DE and ESAP

Professor Ellen Fritsche, MD, holds a professorship for Environmental Totoxicology within the Heinrich-Heine University of Düsseldorf. She has a joint affiliation with the IUF – Leibniz Research Institute for Environmental Medicine in Duesseldorf where she leads the group of Sphere Models and Risk Assessment. Within her two research topics (brain and skin) she focuses on the effects of xenobiotics (e.g. endocrine disruptors) on development and aging. Therefore, she applies 3D in vitro models. Additionally, she investigates the molecular grounds for species differences in neural progenitor cell development and responses to xenobiotics. For this research she uses mainly primary human cells and employs modern techniques like shRNA-based gene silencing and, High-Content-Image-Analyses'.

14.00 - 14.10

Looking Back on LRI Award: Nitromethane in an Early Career?

The LRI-Award programme has been very successful over the last 9 years. LRI-awards have been sponsoring highly innovative, relevant projects in biomedical toxicology or ecotoxicological sciences presented by young, promising early career scientists. Cefic is now following the paths of these well-deserved winners. Where were they at the time of the award? Where are they now? Did the award boost their personal careers? A highly noteworthy follow-up of the last 9 winners.

DR. ANDREAS BENDER

University of Cambridge, UK, Awardee 2012

Andreas Bender is a Lecturer for Molecular Informatics with the Unilever Centre for Molecular Science Informatics at the University of Cambridge. He received his Ph.D from the University of Cambridge as a Cambridge Gates Scholar in 2005 and, before his current appointment, he worked in the Lead Discovery Informatics group at Novartis in Cambridge/MA as well as at Leiden University in the Netherlands. In his work, he is involved with the integration and analysis of chemical and biological data, aimed at understanding phenotypic compound action (such as cellular readouts, and also organism-level effects) on a mechanistic level, ranging from compound efficacy to toxicity. His work is documented in more than 90 scientific publications on cheminformatics and related fields.

14.10 - 14.30

Determining Biologically Relevant Effects of Compound Exposure by Chemical, Biological and Phenotypic Data Integration

The in *silico* prediction of in vivo toxicology of a compound is nontrivial, due in part to the lack of any direct, linear correlation between structural features and toxicity. However, chemical, protein target and phenotypic data provide complementary bioactivity information, and hence the hypothesis of this work was that more accurate toxicity predictions may be afforded by integration of such heterogeneous data. The researchers group have employed an *in silico* algorithm for predicting likely protein targets of compounds based on their structure. Using this approach, it is possible to generate protein affinity descriptors in the form of "scores" corresponding to the likelihood of activity against a panel of 477 human proteins. In future work we will apply the methodology developed to novel datasets such as those derived from ToxCast, as well as exploring further types of biological descriptors.

DR. SABINE LANGIE

VITO (Flemish Institute for Technological Research), BE, Awardee 2013

Since November 2012 **Sabine** has been working at VITO in Belgium as an AXA Research funded postdoctoral fellow on the topic "Allergy: environmental and nutritional programming in childhood". Prior to her position at VITO, she worked as a postdoctoral researcher at Newcastle University in the Centre for Brain Ageing and Vitality, focusing on the modulation of epigenetic modifications and DNA repair in the ageing brain. As a Visiting Researcher within the Institute for Ageing and Health, she continues collaborations with Newcastle University. Dr Langie's Ph.D. research on "Nutritional modulation of DNA repair" comprised the full range of studies with cells in vitro, experimental animals as well as human volunteers, and contributed to the field of genetic toxicology since she modified the comet assay for DNA repair phenotyping purposes.

14.35 - 14.45

Environmental programming of respiratory allergy in childhood: the applicability of saliva to study the effect of environmental exposures on DNA methylation

The study on "Environmental programming of respiratory allergy in childhood: the applicability of saliva to study the effect of environmental exposures on DNA methylation" will broaden Dr Langie's current work with the analysis of DNA methylation patterns in saliva of children participating in birth cohorts in Flanders. It will explore the hypothesis that prenatal chemical exposures can alter fetal DNA methylation patterns, and thereby predispose the child to develop allergic diseases later in life. The use of saliva will simplify the assessment of the impact of environmental exposures on DNA methylation patterns in human biomonitoring studies, especially for children where blood collection is often cumbersome. The ultimate goal of the project is to contribute to the development of prevention strategies (including reduction of chemical exposures), particularly in children, thereby reducing the family and societal burden associated with allergic diseases.

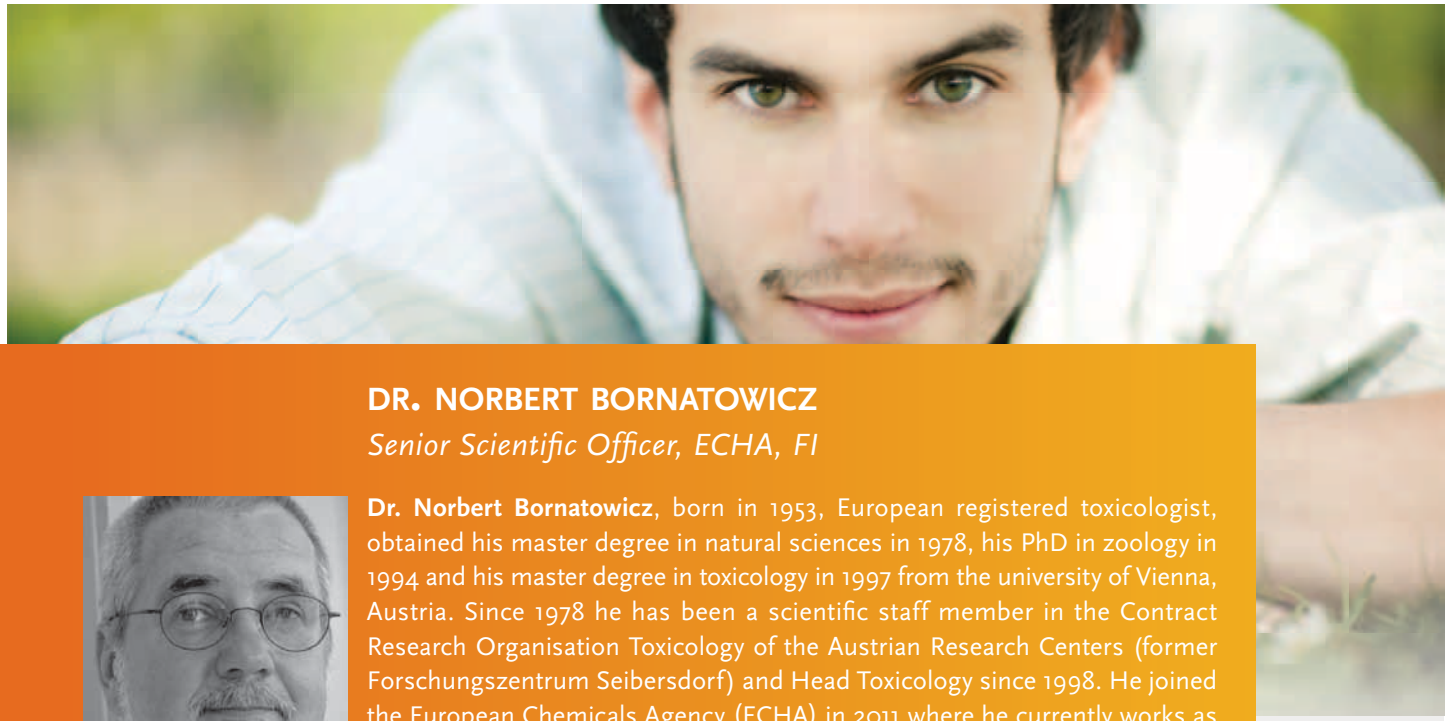
PROF. MICHAEL SIEGRIST

ETH Zurich, CH and ESAP

Michael Siegrist is a Professor for Consumer Behavior at the Institute for Environmental Decisions (IED), ETH Zurich, Switzerland. The focus of his research is on risk perception, risk communication, acceptance of new technologies, and decision making under uncertainty. He is especially interested in food and consumer behavior. He is currently an Associate Area Editor of the Journal of Risk Analysis. He also serves on the editorial board of Human and Ecological Risk Assessment and Journal of Risk Research.

15.10 - 16.45

Evidence-based Science for Critical decisions



DR. NORBERT BORNATOWICZ

Senior Scientific Officer, ECHA, FI

Dr. Norbert Bornatowicz, born in 1953, European registered toxicologist, obtained his master degree in natural sciences in 1978, his PhD in zoology in 1994 and his master degree in toxicology in 1997 from the university of Vienna, Austria. Since 1978 he has been a scientific staff member in the Contract Research Organisation Toxicology of the Austrian Research Centers (former Forschungszentrum Seibersdorf) and Head Toxicology since 1998. He joined the European Chemicals Agency (ECHA) in 2011 where he currently works as senior scientific officer in directorate evaluation.

15.10 - 16.45

Science in the regulatory process (REACH)

The REACH regulation is based on the principle that industry should manufacture, import or use substances or place them on the market with such responsibility and care as may be required to ensure that human health and the environment are not adversely affected. For that purpose, manufacturers and importers have to meet standard information requirements and to submit a dossier containing all this information to the Agency (ECHA). REACH encourages the registrants to use scientific and alternative methods for generating data to replace, reduce or refine animal testing, and defines provisions for the adaption of the standard information requirements. These adaptation possibilities are already extensively used by registrants, but which conditions have to be fulfilled to make them acceptable under REACH?

DR. KRZYSZTOF MARUSZEWSKI

Director of JRC-IHCP, IT

In 1988 **Dr. Maruszewski** graduated from the Faculty of Basic Problems of Technology at the Wrocław Technical University (Poland) and began a doctoral study at Marquette University, USA in 1989. He continued at Marquette University as an Associate Researcher during his post-doctoral work (1992 – 1995). After working in the Institute of Low Temperature and Structure Research in Wrocław and in the Chemistry Department of the Opole University, he became first vice-Director and then Director of the Institute of Materials Science and Applied Mechanics of the Wrocław University of Technology. In 2007 he took the post of Director of Programmes and Stakeholders Relations at the European Commission's Joint Research Centre (JRC) in Brussels and in 2009 he moved to the JRC's Institute for Reference Materials and Measurements in Geel, Belgium. Since 2013 he is Director of JRC's Institute for Health and Consumer Protection in Ispra, Italy.

15.40 - 16.10

Science based policy making. Who does what (and why)?

Increasing awareness of health, safety and security issues and growing risk aversion among citizens creates an increasing societal demand to understand uncertainty, estimate probability, and eventually manage and reduce risks. While this growing demand brings more and more aspects of policymaking within the orbit of science, we need to interrogate ourselves upon which information we expect from science, and what are the science's limits and role in the face of uncertainty.

MS ERIKA WIDEGREN

Executive Director, Atomium Culture, BE

Erika Widegren is Executive Director of Atomium Culture (AC) and has been working to connect science and society for nearly a decade. She graduated from the University of Edinburgh in Philosophy and Political Science, where she also studied Economics and Mathematics. Erika has actively contributed to the development strategy of the Permanent Platform of Atomium Culture, together with the former French President and Honorary President V. Giscard d'Estaing and the President M. Baracchi Bonvicini, founders of AC. In 2013 she directed the "Special Initiative for Citizen Engagement in Science" that AC developed together with Der Standard (Austria), El País (Spain), Frankfurter Allgemeine Zeitung (Germany), Il Sole 24Ore (Italy) and The Irish Times (Ireland). She is currently building on this concept further by heading the launch of REIsearch – Research Excellence Innovation Network.

16.10 - 16.40

The role of the media in responsible Research and Innovation

What is the current landscape of "evidence-based science for critical decisions"? What do we mean by this concept? What are the recent developments in this field? How is this reflected in Horizon 2020? Media encompass the broader concept of both new and traditional media. What are the key issues and how does this relate to the activities of LRI?

Workshop Chair: Stuart Marshall, Unilever, LRI SIG

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