13th Annual Cefic-LRI Workshop 2011

Optimizing resource and knowledge in risk assessment

BRUSSELS, 16-17 NOVEMBER, 2011
SOFITEL BRUSSELS EUROPE HOTEL

cefic

LRI
The Long-range Research initiative

LRI in brief

A major contribution to a sustainable chemical industry

Currently, looking at the assessment both in the public and regulatory domain, there is increasingly an erosion of the impact of risk assessment on public trust and confidence due to a tidal wave of more and more complex published data sets, and in most cases, without a sufficient science based understanding of the impact on human health and the environment. On the other hand, these data are created by a continuously growing number of institutions, experts and research funding lines.

"Are we becoming increasingly data giants and knowledge dwarfs?"

Thus the challenge of resource efficiency in the work of all stakeholders needs increased attention.

The 13th edition of the LRI annual workshop will address a range of critical issues, including:

- What new approaches are needed on optimization of resources and knowledge in risk assessment?
- What does LRI do in this context and what is its research vision? How do we also encourage the young generation of scientists to tackle these key questions?
- What is the value of such a programme in the future from a multi-stakeholder perspective and is it fit for purpose?

Programme Day 1 | WEDNESDAY 16 NOVEMBER 2011

17.30 - 18.00	Europe (foyer)	Registration
18.00 - 19.30	Europe (foyer)	**Invited poster session on 2010-2011 completed projects accompanied by networking cocktail**
	Europe (foyer)	• Simulation of blood and urine levels after exposure *Frans Jongeneelen, IndusTox, NL* • Inclusion of metabolism in toxicity predictions, comparing in silico with in vivo *Bas J. Blaauboer and Milou M.L. Dingemans , IRAS, NL* • Signal Transduction Pathways: Potential Foundation for Developmental Toxicity Alternatives *George Daston, P&G, US* • ART version 1.5: inclusion of an exposure database *Maikel van Niftrik, TNO, NL* • OLIMPIC - Overcoming current Limitations In Metabolism Prediction of Industiral Chemicals *Lothar Terfloth, Molecular Networks, DE* • A novel tiered approach to aggregate exposure assessment of chemicals in articles and the environment *Tassos Karabelas, CERTH, GR* • Integrated Exposure for Risk Assessment in Indoor Environments (INTERA): Results from 3 case studies to test project developed tools *Karen Galea, IOM, UK* • The rational analysis and design of enhanced biodegradation tests for persistence assessment *Russell Davenport, University of Newcastle, UK* • Saving test animals, time and costs in fish bioconcentration tests *Michael McLachlan, University of Stockholm, SE* • The Critical Body Residues: an alternative dose parameter in ecotox studies *Joop Hermens, University of Utrecht, NL*
19.30 - 22.00	Paul Henri Spaak I+II+III	**Workshop Dinner-Talk: ""Do we need Sustainability?"** *by Prof. Richard Darton, University of Oxford*

Prof. Richard Darton
University of Oxford

Richard Darton worked for Shell in the Netherlands 1975-1991, in research, and also in design and technology transfer roles for manufacturing and oil & gas production. He then joined Oxford University's Engineering Science department where he was Head 2004-2009. He was Vice President of the Institution of Chemical Engineers 2001-5, responsible for Qualifications and Professional Standards, and President 2008-9. He is currently President of the European Federation of Chemical Engineering. His research interests are: distillation and other separation processes, surfactants, water purification, and sustainable development. He was awarded an OBE for services to engineering in 2011.

"Do we need Sustainability?"

19.30 - 22.00

A recent consultation across Europe revealed that members of the European Federation of Chemical Engineering have serious concerns about sustainability issues. In its Perspectives Survey, four fifths of respondents agreed that Climate Change is a big challenge for the future of humanity, and almost 90% felt that countries must do more to reduce their reliance on fossil fuels. These views seem to be at odds with the public unpopularity of practical measures like building wind farms, and, of course, the rising cost of energy. In moving to the low carbon economy, the chemical industries have a key role to play, in providing the new products that will be needed, and in using less fossil fuel. The debate with our membership has also revealed sustainability concerns about the availability of water supplies and other key resources. In explaining the need for change to the public, it is essential that we are honest and ethical, and maintain public trust: the Survey revealed a need for more education and awareness in the importance of ethical standards and behaviours. Finally, the European chemical industry needs a highly educated and motivated workforce. Mobility and employment are issues of concern, particularly in countries and regions where the chemical and process industries are economically weak. Chemistry and chemical engineering are vital disciplines for the sustainable low carbon future: we cannot afford to recruit only where the chemical and process industries are strong.

Programme **Day 2**

THURSDAY
17 NOVEMBER 2011

8.00 - 8.45	**Europe (Foyer)**	Welcome/networking coffee
8.45 - 9.00	**Paul Henri Spaak I+II+III**	Welcome *by Dr. Melanie Bausen, BASF, LRI SIG*
9.00 - 9.10		Opening remarks *by Yves Verschueren, essenscia, Cefic R&I Programme Council*
9.10 - 10.10	**Paul Henri Spaak I+II+III**	**Keynote session: "Perspectives on optimizing resources"** *Chair: Dr. Melanie Bausen, BASF, LRI SIG*
9.10 - 9.30	**Paul Henri Spaak I+II+III**	"Optimising resource: an academic approach" *by Prof. Jim Bridges, University of Surrey*
9.30 - 9.50		"Making most of regulatory information: All for one or one for all?" *By Bjorn Gaarn Hansen, European Commission, DG Environment*
9.50 - 10.10		"Industry perspective" *By Dr. Paul Carmichael, Unilever*
10.10 - 10.30	**Europe (Foyer)**	☐ Coffee break
10.30 - 12.35	**Paul Henri Spaak I+II+III**	**Plenary sessions: "LRI projects results"** *Chair: Dr. Melanie Bausen, BASF, LRI SIG*
10.30 - 10.50	**Paul Henri Spaak I+II+III**	"N1: Results and Evaluation of Studies Performed with ZnO and Amorphous SiO_2 Nanoparticles" *by Dr. Otto Creutzenberg, Fraunhofer ITEM*
10.50 - 11.10 webconference		"N2: Fate and uptake of engineered nanoparticles in aquatic systems: what are the implications for environmental risk assessment?" *by Prof. Alistair Boxall, University of York*

Programme Day 2

THURSDAY
17 NOVEMBER 2011

11.10 - 11.30	Paul Henri Spaak I+II+III	"ECO9: Relationships between BCF, BMF and BAF: Improving forecasting of residues in biota in the environment based on laboratory testing" *by Dr. Heather A. Leslie, VU Amsterdam*
11.30 - 11.50		"EMSG46: Characterization of testicular toxicity using traditional and omic tools" *by Dr. David Rouquié, Bayer Cropscience*
11.50 - 12.10		"EMSG49: Reprogramming of DNA methylation during mammalian development and environmental impact of Endocrine Disruptors" *by Dr. Michael Weber, Institute of Molecular Genetics CNRS*
12.10 - 12.30		"Endocrine disruption: key LRI achievements and current outlook" *by Alan Poole, Dow*
12.30 - 13.45	Robert Schuman	Lunch
13.45 - 14.45	Paul Henri Spaak I+II+III	**LRI Innovative Science Award** *Chair: Prof. Colin Janssen, University of Gent, ESAP*
13.45 - 14.05	Paul Henri Spaak I+II+III	"Human and rodent 3D in vitro cultures as tools for human risk assessment" *by Prof. Ellen Fritsche, Leibniz Research Institute for Environmental Health and RWTH Aachen, ESAP*
14.05 - 14.25		"In quest of new fingerprints of exposure to VOC from consumer products" *by Dr. Juana Maria Delgado Saborit, University of Birmingham, Awardee 2010*

14.25 - 14.35	Paul Henri Spaak I+II+III	LRI Innovative Science Award 2011 presentation *by Yves Verschueren, essenscia, Cefic R&I Programme Council*
14.35 - 14.45		"Improving mechanistic understanding of population recovery for aquatic macroinvertebrates" *by Dr. Thomas Preuss, Aachen University, Awardee 2011*
14.45 - 16.45	Paul Henri Spaak I+II+III	**"LRI Research vision"** *Chair: Prof. Ian Kimber, University of Manchester, ESAP*
14.45 - 15.10	Paul Henri Spaak I+II+III	"Risk and Benefit Decisions: How Smart are Consumers?" *By Prof. Michael Siegrist, ETH Zurich, ESAP*
15.10 - 15.35		"TT21C: The Vision and Progress toward Implementation" *By Dr. Daniel Krewski, University of Ottawa*
15.35 - 16.00	Europe (Foyer)	☐ Coffee break
16.00 - 16.25	Paul Henri Spaak I+II+III	"Optimizing resources in the context of REACH" *by Dr. Katy Taylor, British Union Against Vivisection*
16.25 - 16.50		"Media perspective" *By Mamta Patel, Chemical Watch*
16.50 - 17.05	Paul Henri Spaak I+II+III	**Panel discussion**
17.05 - 17.20	Paul Henri Spaak I+II+III	**"Conclusions & future perspectives"** *by Dr. Gernot Klotz, Cefic R&I*
17.20	Paul Henri Spaak I+II+III	Feedback questionnaire & Close of Cefic-LRI Workshop 2011

Speakers **Day 2**

THURSDAY
17 NOVEMBER 2011

CHAIR

Dr. Melanie Bausen
BASF, LRI SIG

Welcome

8.45 - 9.00

Perspectives on optimizing resources

8.45 - 9.00

Plenary sessions: "LRI projects results"

10.30 - 12.35

Melanie Bausen earned her diploma in biology from Cardiff University and Johannes Gutenberg University of Mainz. She received her PhD in neurobiology from the Max Planck Institute for Brain Research in Frankfurt/Main, Germany. Since her transition to BASF Melanie initially took over responsibilities in the Department of Regulatory Toxicology of the Global Competence Center Environment, Health and Safety (GUP/PB). Since 2008 she has been the Chair for the implementation of the global BASF Product Stewardship goal 2020/GPS and coordinator of the ICCA Chemical Policy and Health Leadership Group. In 2011 she assumed the Chair of the European Cefic LRI Program.

Yves Verschueren has been the Managing Director of essenscia since September 2007. After finishing his studies in law and economics at the Catholic University of Leuven, he spent his whole career with Unilever. He worked in Belgium, Switzerland, Zimbabwe, and Italy as well as for Unilever Europe as SVP Home Care, before becoming the CEO of Unilever Belgium. As Managing Director of essenscia, he is also member of the Board of the Federation of Enterprises in Belgium (VBO/FEB). He is married and has 3 children.

Yves Verschueren
Managing Director,
essenscia

Opening Remark

9.00 - 9.10

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Prof. Jim Bridges
University of Surrey

Jim Bridges has been the Emeritus Professor of Toxicology and Environmental Health at the University of Surrey, Guildford since 2003. Since 2004 Professor Bridges has been Chairman of the EU Scientific Advisory Committee (DG-SANCO) on Emerging and Newly Identified Health Risks (SCENIHR) which advises the Commission on a range of issues from the safety of medical devises to the health implications of the new technologies and risk assessment methodology. Professor Bridges has published nearly 400 scientific paper, while his current research interest is in risk assessment methodological developments.

Optimising resource: an academic approach

9.10 -9.30

Risk assessment is facing a number of challenges that will result in a major change in the way that risk assessments are conducted in the future. Political pressures are likely to result in a progressive reduction in the use of laboratory animals for toxicology testing. In parallel there are demands for risk assessments to be conducted on an ever increasing number of chemicals and chemically based products. One outcome is likely to be a paradigm shift to exposure driven risk assessments. This will require significant advances in the methods used to assess exposure. Resource issues include the availability of suitably trained risk assessors, and substantial research progress both in exposure assessment and in the development of suitable in vitro and in silico models to replace the current animal tests.

Bjorn Gaarn Hansen
European Commission,
DG Environment

Making most of regulatory information: All for one or one for all

9.30 -9.50

From 1993 to 2003 **Mr. Hansen** co-ordinated the work of implementing the Existing Substances Regulation in the European Chemicals Bureau and provided the Commission with support in developing REACH. He then moved to the DG Environment where he is the Deputy Head of the Chemicals Unit. He was on secondment from the Commission as the Director of Operations in ECHA for one year ending September 2008. He is now Deputy Head of Unit in DG Environment responsible fro Chemicals, Biocides and Nanomaterials.

Speakers **Day 2**

THURSDAY
17 NOVEMBER 2011

Paul Carmichael has over 20 years experience in Toxicology and Cancer Research; largely in the academic arena, before joining Unilever, from Imperial College London, in 2003. He has published over seventy research papers in peer-reviewed scientific journals and has served on numerous committees such as the UK Environmental Mutagen Society, British Toxicology Society, COLIPA and was a past recipient of the Upjohn Cancer Investigator Award from the American Association for Cancer Research. He has a B.Sc. degree from the University of Surrey in Biochemistry/ Toxicology and a Ph.D. in Biochemistry from King's College.

Dr. Paul Carmichael
Unilever

Industry perspective

9.50 -10.10

Dr. Otto Creutzenberg
Fraunhofer ITEM

N1: Results and Evaluation of Studies Performed with ZnO and Amorphous SiO_2 Nanoparticles

10.30 -10.50

This project on ZnO and amorphous SiO_2 was conducted at Fraunhofer ITEM as the Cefic-funded contribution to the OECD Sponsorship Programme. ZnO: A 14-day and a subsequent 90-day nose-only inhalation test were conducted with the nanoscaled test item Z-COTE® HP1 and a microscaled reference ZnO. OECD 412 and 413 were expanded by additional endpoints addressing nanoparticle-specific toxicity: i.) bronchoalveolar lavage (BAL) to analyse inflammation; ii.) toxicokinetics; iii.) genotoxicity: micronucleus test (MN), 8-OH-dG in lung tissue; iv.) cell proliferation (BrdU). After inhalative uptake and phagocytosis Z-COTE® HP1 shows a rapid dissolution under lysosomal pH and thus does not accumulate in lungs. Chemical toxicokinetics resulted in very small Zn amounts detectable in lungs only (chemically or TEM). Lung toxicity was characterized by an acute inflammation at high doses with subsequent rapid recovery. Histopathological examination revealed a slight degeneration of the olfactory epithelium as the only adverse effect. Genotoxic assays were negative. The NOAEL values derived from these 14-day and 90-day inhalation tests were 2 and 1.5 mg/m³, respectively. - In a dermal absorption test in rats (OECD 427) Z-COTE® HP1 was not absorbed via skin. SiO_2: Precipitated SiO_2 (NM-200; JRC) is currently investigated analogically, however, following dosing via the inhalative and oral exposure path. In vivo tests were juxtaposed to in vitro counterparts and complement one another.

Dr. Otto Creutzenberg studied chemistry and biochemistry at the University of Münster, Germany. Since 1985 he has been a scientific staff member in the department of Inhalation Toxicology, Fraunhofer ITEM, Hannover, Germany, with a research focus on toxicology of lungs. In 1996 he graduated from the University of Leipzig as a certified chemist for toxicology. Since 2003 he has been a scientific staff member in the department of Inhalation Toxicology and Chemical Risk Assessment in Fraunhofer ITEM. He is an expert in inhalation toxicity of (nano)particles and fibres.

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Prof. Alistair Boxall
University of York

Alistair Boxall is Professor in Environmental Science at the University of York and a Visiting Fellow at the Food and Environment Research Agency. With a broad-based training in environmental chemistry and toxicology from Leicester Polytechnic and the University of Sheffield, Alistair had previously worked at the Water Research Centre, Liverpool John Moores University and Cranfield University. He has particular interest in the fate, behaviour and effects of emerging environmental contaminants (nanoparticles, pharmaceuticals and degradates) and co-ordinates a large number of research projects in this area.

N2: Fate and uptake of engineered nanoparticles in aquatic systems: what are the implications for environmental risk assessment?

10.50 -11.10 (webconference)

Nanotechnology is a rapidly expanding area and engineered nanoparticles (ENPs) are finding applications in a wide range of areas including use in cosmetics, paints and coatings, bioremediation and water treatment. In the future widescale use of ENPs in pharmaceuticals and plant protection products is expected. It is inevitable that ENPs will be increasingly released to the environment and that they could then enter food and water supplies. This presentation will provide an overview of a recent Cefic-funded study that aimed to understand the fate of ENPs in the aquatic environment and the potential uptake of ENPs into aquatic invertebrates. The study was done on a set of model Ag and Au particles with anionic and amphiphilic cappings in the size range 10 – 30 nm. A limited number of studies were also done on TiO_2 particles. The project show that following release to the aquatic environment, the study ENPs will aggregate to different extents and/or associate with bed sediments. The behaviour can be explained based on the properties of the ENP and the characteristics of the test environment. While uptake of the study particles into daphnids and lumbricids has been seen, detailed analysis (e.g. using X-ray fluorescence at the ANKA synchrotron facility) indicates that the tested ENPs appear to remain in the gut of the organism and are only accumulated within the organism to a limited extent. During the presentation, the implications of these findings for environmental risk assessment of ENPs will be discussed.

ECO9: Relationships between BCF, BMF and BAF: Improving forecasting of residues in biota in the environment based on laboratory testing

11.10 -11.30

by Dr. Heather A. Leslie
VU Amsterdam

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Dr. David Rouquié
Bayer Cropscience

David received his Ph.D in Biochemistry and Molecular Biology from Montpellier University, France. Then, he moved to the Max Planck Institute of Cologne, Germany as postdoctoral fellow where he worked on auxin transport systems using cell biology techniques. In 2000, he joined RhoBio in Evry, France where he was responsible for genomics projects. In 2004, he moved to the research center of Bayer CropScience in Sophia Antipolis, France where he is currently senior toxicologist involved in the application of molecular tools to standard and special toxicity studies for safety assessment of chemicals and transgenic plants.

EMSG46: Characterization of testicular toxicity using traditional and omic tools

11.30 -11.50

The aim of the Cefic research project (EMSG46) was to characterize adult rat testicular toxicity induced by compounds that act through an endocrine mediated mode of action (estrogenic or antiandrogenic) or have a direct effect on the testes. To fully realize this goal, the differentiation between normal background variability (ie no effect), an adaptive change and an adverse effect due to treatment (both in terms of dose level and treatment duration) will be established for each of the compounds investigated. Gravimetric and hormonal changes as well as testicular histopathology and changes in gene expression will be investigated. In addition, the concentration of parent compound and major metabolites in the plasma and testes will also be established. The compounds chosen for investigation were the estrogen, ethinyl estradiol (EE), the antiandrogen, flutamide (FM) and the direct-acting testicular toxicant, 1,3-dinitrobenzene (DNB). Dose response studies have been conducted for each compound using either a standard 28-day oral toxicity study (according to the OECD 407 guidelines) for EE and FM or a 4 day oral toxicity study for DNB. The transition between normal variability, adaptive responses and adverse effects for testicular toxicity are currently being established for each compound for all parameters investigated. As an illustration, data concerning the hormonal, histopathological and gene expression changes induced by FM and DNB will be presented.

Dr. Michael Weber
Institute of Molecular Genetics
CNRS

EMSG49: Reprogramming of DNA methylation during mammalian development and environmental impact of Endocrine Disruptors

11.50 -12.10

DNA methylation is an epigenetic modification that plays essential roles in development and disease: it is required for embryo survival and perturbed in many pathologies, including cancer. In addition, alterations of DNA methylation by xenobiotic agents and its possible transmission through generations are a great matter of epidemiological concern. We use genome-wide approaches to map DNA methylation and better understand the distribution and function of DNA methylation in mammalian genomes. Our results suggest that DNA methylation is involved in the regulation of key developmental genes and can be transmitted through generations in mammals. Currently, we are applying epigenome mapping to identify abnormal DNA methylation patterns in mouse models exposed to endocrine disruptors (EDs). The long term objectives are to better understand the epigenetic mechanisms of action of EDs and identify novel relevant DNA methylation biomarkers.

Michael Weber studied Molecular Biology at the ENS Lyon and obtained his PhD from the University of Montpellier. During his postdoctoral work at the Friedrich Miescher Institute in Basel (Switzerland), he developed genome-wide approaches to study the distribution of DNA methylation in mammalian genomes. Since 2011, he is heading the team "Epigenetic regulation of cellular identity" at a CNRS institute of the University of Strasbourg.

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Alan Poole
Dow

Alan Poole is a Senior Consulting Toxicologist in The Dow Chemical Company. Prior to joining Dow Alan worked for the UK Medical Research Council studying the effects of particles on human lung disease and then in preclinical development in Smith Kline and French. Since joining Dow he has provided toxicological consulting expertise to a variety of Businesses and Functions. Alan holds a Doctor of Philosophy degree and was awarded Fellowship of the Royal College of Pathologists in 1995. He is based at Dow Headquarters for Europe, Middle East and Africa in Horgen, Switzerland.

Endocrine disruption: key LRI achievements and current outlook

12.10 -12.30

Endocrine disruption centres on the proposition that some chemicals in the environment can mimic the action of natural hormones and thereby disrupt the normal function of the endocrine system in variety of species including man. As the endocrine system is responsible for regulating many biological functions including reproduction and development any disruption of normal activity has the potential to cause adverse health outcomes. The genesis of endocrine disruption and the resulting public fear and regulatory concern began in the early 1990s when a hypothesis article written by Richard Sharpe and Niels Skakkabaek suggested that exposure to chemicals with the property to mimic the properties of oestrogen can lead to an increase reproductive disorders. Other articles appeared suggesting exposures to endocrine disrupting chemicals were responsible for a decline in sperm counts and quality over the past 50 years. At the same time concerns were raised about endocrine disruption being responsible for increased incidences of breast cancer and prostate cancer while studies in wildlife suggested exposures could generate pseudo-hermaphroditic fish. This presentation describes the work the European Chemical Industry has contributed towards developing validated test methods, mechanistic research to understand better hormonal action and studies in humans and wildlife to investigate relationships between exposures to hormone active agents and disease outcome.

LRI Innovative Science Award

13.45 - 14.45

Dr. Colin R. Janssen is full professor of Ecotoxicology at Ghent University, Belgium where he is department head and director of the Laboratory for Environmental Toxicology, Department of Applied Ecology and Environmental Biology at the Faculty of Biosciences. He holds a Masters degree in Zoology and obtained his Ph.D. in Environmental Sciences (1992) from the same university. He now teaches courses in aquatic ecology, marine ecotoxicology and environmental toxicology and risk assessment. C. Janssen is a full member and chair of the Ecotoxicity group of Belgian Health Council. He has published more than 270 international papers.

CHAIR

Prof. Colin Janssen
University of Gent, ESAP

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Prof. Ellen Fritsche
Leibniz Research Institute for Environmental Health and RWTH Aachen, ESAP

Ellen Fritsche studied medicine and achieved her physician PhD at the University of Düsseldorf. Since 2004 she is a Group leader (PI) at the Institute for Environmental Health Research (now Leibniz Research Instiute for Environmental Health) and holds a professorship for dermatotoxicology at the RWTH Aachen since 2009. Her current focus lies on 3D in vitro models for toxicity testing and future implementation into risk assessment. Therefore, she co-founded the SME praeventicon GmbH where she functions as the CEO. Praeventicon offers e.g. developmental neurotoxicity testing from rodents to humans in 3D neurosphere systems.

Human and rodent 3D in vitro cultures as tools for human risk assessment

13.45 - 14.05

For detection of chemically-induced developmental neurotoxicity (DNT), animal studies are the gold standard in toxicology. These have the drawback that predictability of animal experiments for human health is often unsatisfactory due to species differences. Therefore, there is the worldwide demand for implementing alternative human in vitro models to identify chemicals that are hazardous to human health. One problem of these human-based in vitro models is the interpretation of data when human in vitro results differ from animal data. To be able to distinguish if such inconsistencies are due to inter-species or in vitro-in vivo differences, we have established neurosphere-based corresponding in vitro systems for DNT testing from animals and humans which allow us to extrapolate results from human in vitro via rodent in vitro to existing rodent in vivo studies and thus interpret human in vitro data on an experimental basis. By utilizing polybrominated diphenyl ethers we show species-specific effects on neurosphere development and identify thyroid hormone disruption as the reason for DNT by PBDEs. Species differences of PBDE effects are shown to be due to diverse expression of human and mouse thyroid hormone receptors. On the basis of this data, we propose implementation of experimentally-derived toxicodynamic factors for species differences to be included in hazard and risk assessment.

Dr. Juana Maria Delgado Saborit
University of Birmingham,
Awardee 2010

In quest of new fingerprints of exposure to VOC from consumer products

14.05 - 14.25

Volatile organic compounds (VOCs) are ubiquitous in indoor air with origins in outdoor air, building related materials and consumer related products. The rate of emission of VOCs will decay and eventually, will reach a quasi steady emission rate in new buildings within weeks to months. Therefore, new buildings or recently redecorated indoor environments have been associated with high concentrations of VOCs.
Indoor environment contribute greatly to personal exposures. After inhalation, VOCs are metabolised producing several biomarkers of exposure detectable in the urine even at low levels of exposure.
This proposal will recruit three groups of subjects with varying exposures including occupationally exposed to VOC, subjects living or working in new or redecorated buildings and a control group. The aims are to a) characterise human exposures, lung doses and indoor concentrations of VOCs; and b) find suitable biomarkers to monitor the exposure and effects of low-level of VOCs, especially benzene due to its carcinogenic nature.
The expected advances of this research are the characterization of exposures to levels of VOCs typically found in consumer and construction products and the identification of new VOC biomarkers of exposure which can be used to biomonitor exposure to VOCs at low level concentrations. New biomarkers of exposure and effect will be valuable tools for the research community to understand how environmental exposures affect human health.

Dr. Delgado Saborit is a Research Fellow at the Division of Environmental Health and Risk Management at the University of Birmingham. She is an expert in exposure assessment studies using different sampling and analytical techniques to characterize inhalation doses, personal exposures and environmental levels of air pollutants. She has expertise in chemical speciation for source identification. She has coordinated large projects involving recruiting and sampling with subjects, sampling in a wide range of indoor and outdoor micro-environments, and using biomarkers as tracers of exposure to air pollutants.

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Dr. Thomas Preuss
Aachen University,
Awardee 2011

Thomas G. Preuss field of research is the understanding and prediction of effects from chemical stressors on different biological levels. The main focus is on the use of various modelling techniques to link and extrapolate the effects between various environmental conditions as well as different biological levels. He is chair of the SETAC Advisory group MeMoRisk and external expert for aquatic ecotoxicology at the EFSA. Currently Thomas holds a position at assistant professor at the Institute for Environmental Research at RWTH Aachen University. His phd-thesis was award by the SETAC-GLB young investigator award in 2006.

Improving mechanistic understanding of population recovery for aquatic macroinvertebrates

14.35 - 14.45

Due to the release of chemicals into the environment dynamics of exposed populations can be changed, and thus, may subsequently lead to ecosystem degradation, loss of ecosystem services and loss of biodiversity. Effects of a toxicant on a given species population can thereby be assessed using the ecological vulnerability concept. Within this project we will focus on the population sustainability, defined as the potential of a species to recover from any effect. Recovery is an important aspect in risk assessment of plant protection products, as well as in the restoration of ecosystems to their good ecological status. Despite its importance in risk assessment, the concept of recovery is still vague and under debate. The aim of this study will be the development of a scientifically-based approach for the mechanistic analysis and prediction of recovery for aquatic macroinvertebrates.
This project will follow a research approach, for which analysis of field data and mechanistic modelling gear into each other. Therefore the recovery patterns from field data will be analysed using the trait approach, accomplished by mechanistic model approaches on population and ecosystem levels. This integrative approach will lead to overall assessment of recovery and will increase the acceptance.
The knowledge and data generated will be summarised to improve the mechanistic understanding of population recovery and used to define realistic worst-case species for environmental risk assessment.

LRI Research vision

14.45 - 16.45

Ian Kimber is currently Professor of Toxicology and Associate Dean for Business Development in the Faculty of Life Sciences at the University of Manchester. Previous to that he was Head of Research and Principal Fellow at the Syngenta Central Toxicology Laboratory. He has published over 500 research papers, review articles and book chapters and serves currently on the editorial boards of toxicology, immunology, dermatology and pathology journals. Earlier this year Professor Kimber was awarded the Bo Holmstedt Memorial Fund Award and Lectureship by Eurotox. In 2011 Professor Kimber was awarded an OBE in the Queen's Birthday Honours list.

CHAIR

Prof. Ian Kimber
University of Manchester, ESAP

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Prof. Michael Siegrist
ETH Zurich, ESAP

Prof. Siegrist studied psychology, economics and mass communication at the University of Zurich. During 1998-2000 he was a visiting researcher at Western Washington University, WA, USA. In 2001 he completed his 'Habilitation' at the Faculty of Arts at the University of Zurich. Since 2007 he is a Professor at ETH Zurich. Professor Siegrist has published numerous articles about risk perception, trust, risk communication and risk management. His research focuses, at the moment, on gene technology, nuclear power, climate change issues, food hazards and risk communication in the medical field. He is an Area Editor of the Journal Risk Analysis.

Risk and Benefit Decisions: How Smart are Consumers?

14.45 - 15.10

Two modes of thinking can be distinguished, the experiential system and the analytical system. The analytical system relies on probabilities, logical reasoning, and evidence. The experiential system relies on images, metaphors, and narratives. Based on experimental studies it will be shown that (1) labeling new technologies may increase risk perception, because consumers interpret the label as sign of risk. (2) Affect based decisions can result in wrong choices. (3) Consumers may base their decisions on salient and not important dimensions. (4) Negative information has more impact compared with positive information. Based on these results it can be concluded that consumers are in many situations street-smart, but not "rational" decision makers.

Dr. Daniel Krewski
University of Ottawa

TT21C: The Vision and Progress toward Implementation

15.10 - 15.35

Dr. Krewski obtained his Ph.D. in statistics from Carleton University and subsequently completed his M.H.A. at the University of Ottawa. He has contributed to 160 peer-reviewed scientific papers and published over 600 articles. Dr. Daniel Krewski is currently Scientific Director of the McLaughlin Centre for Population Health Risk Assessment at the University of Ottawa and holds a Natural Sciences and Engineering Research Council (NSERC) of Canada Industrial Research Chair in Risk Science. He is also President and CEO of Risk Sciences International Inc. and Director of the Network for Environmental Risk Assessment and Management (NERAM-Ottawa node).

Speakers Day 2

THURSDAY
17 NOVEMBER 2011

Dr. Katy Taylor
British Union
Against Vivisection

Katy is Senior Science Advisor to the BUAV, one of the world's oldest animal protection organisations that campaigns solely on animal testing. She has presented at national and international fora on how to implement polices to reduce the number of animals used in experiments. As secretariat to the International Council for Animal Protection in Pharmaceutical Programs (ICAPPP) she responds to consultations on guideline revisions relating to the use of animals in pharmaceutical testing. She also represents the European Coalition to End Animal Experiments (ECEAE) at the European Chemicals.

Optimizing resources in the context of REACH

16.00 - 16.25

The European Coalition to End Animal Experiments (ECEAE) is an umbrella organisation of 17 animal protection groups across Europe which campaigns on animal testing issues. Since the beginning, the ECEAE has served the REACH testing proposals system in an attempt to reduce the numbers of animals used for REACH purposes. The testing proposal system is a mechanism built into REACH that enables third parties to submit existing data or other scientific arguments on each registered chemical to prevent the need for further testing. By April 2011, the ECEAE team had commented on all 81 testing proposals. Tests proposed included reproductive toxicity, 90 day repeated dose, genotoxicity, carcinogenicity, long-term fish toxicity and fish bioaccumulation tests. 43% of our comments involved weight of evidence, 27% exposure based and 20% read across style arguments. For example, we have suggested that physical/chemical properties may waive testing in some cases (e.g. corrosive or rapidly hydrolysing substances). We have suggested arguments based on low toxicity/low absorption as further reasons for waiving testing. We have suggested in vitro tests or QSAR models that may demonstrate redundancy of further testing. Where multiple tests are proposed, we have also asked that refined tests are used such as the Extended One Generation Reproductive Toxicity Study (OECD 443) or that tests are done sequentially to prevent unnecessary testing, as the results of the first test may be conclusive. In this presentation we share our experiences of both the use of, and acceptance, of these strategies by ECHA and Member

Mamta Patel
Chemical Watch

Media perspective

16.25 - 16.50

Cefic has asked Chemical Watch to give a media perspective on the topic of "optimising resources and knowledge in risk assessment". I hope to share with the audience some of the insight I have gained by reporting on this global agenda since the launch of the publication in 2007 - and my work as a journalist in the past two decades.

Despite the global economic crisis, in the background a political and regulatory agenda is unfurling and bringing welcome but challenging change across the world from the perspective of those who want better risk assessment, communication and management of chemicals to protect populations and ecosystems.

It has been some time coming and the focus on Rio+20 in 2012 is likely to ring alarm bells about the slow progress on long-standing goals. But, undeniably, there is an accelerating domino effect catalysed by implementation of the UN Globally Harmonised System on the classification and labelling of chemicals (GHS) and in Europe by the adoption of the REACH Regulation.

What is critically needed now to feed this global regulatory machine is greater consensus not only on the acceptance of risk assessment methodologies and standards but also risk management.

Mamta is Editor and a co-founder of Chemical Watch. She writes and oversees the news and features published daily on the Chemical Watch site and in our monthly briefing, as well as the editorial content of events and special publications such our Business Guide to REACH. She is also a visiting lecturer at University College London. Mamta has a Degree in Applied Chemistry and a Postgraduate Diploma in Journalism. She has worked full-time as a journalist since leaving university first on a magazine for family doctors, GP, then for the industry magazine European Chemical News (now ICIS Chemical Business). She also helped to launch ENDS Europe.

Speakers **Day 2**

THURSDAY
17 NOVEMBER 2011

Dr. Gernot Klotz
Cefic R&I

Conclusions & future perspectives

17.05 - 17.20

Dr. Gernot Klotz studied Biology and Microbiology at the University of Aachen (Germany). After working foR Armour he joined Bayer in various business sections. Since February 2007 he has been the Executive Director for Research and Innovation for Cefic. Specific key areas of responsibility are innovation, emerging science-policy issues, nano risk benefits and testing risk assessment, as well as managing the Cefic Research and Innovation Board. He is also a Board Member of the EU Technology Platform for Sustainable Chemistry (SusChem). He is also responsible for the Value Chain topic within the High Level Group Key Enabling Technologies (HLG KETs).

In its thirteen years of activity, the Long-range Research Initiative (LRI) programme has made substantial strides in providing proactive scientific advice to industry, regulators and policy makers, and designing a robust, reliable framework on which they can draw to respond more quickly and accurately to societal concerns.

More forward looking, LRI aims to support the competitive and innovative edge for Europe and its chemical industry. It has adjusted focus to keep it in line with key public concerns:

- Development of intelligent testing (including alternatives to animal testing);
- Understanding the effects of chemicals in complex environments and health (including endocrine and cocktail effects);
- Public acceptance of new technologies and products.

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