

# ecetoc Annual Report 2013

EUROPEAN CENTRE FOR ECOTOXICOLOGY AND TOXICOLOGY OF CHEMICALS

[www.ecetoc.org](http://www.ecetoc.org)

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***ECETOC Annual Report 2013***

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EUROPEAN CENTRE FOR ECOTOXICOLOGY  
AND TOXICOLOGY OF CHEMICALS

Annual Report 2013

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# SHAPING THE GLOBAL CHEMICALS RESEARCH AGENDA

## Enabling chemical benefits while protecting human health and the environment

Developing and promoting quality science, ECETOC is the leading European scientific forum for the ecotoxicology and toxicology of chemicals, biomaterials and pharmaceuticals. ECETOC is an independent organisation, highly-respected in the regulatory and scientific communities. Founded in 1978 and based in Brussels, ECETOC's work focuses on the health assessment and environmental safety of substances.

## The role of ECETOC in Global Regulatory Needs

ECETOC is the only not-for-profit European Scientific Forum whose sole purpose is to enhance the value of risk assessment by working openly and transparently with stakeholders to develop and promote top quality science.

As a non-political, industry-funded think tank, ECETOC taps directly into all segments of the chemical industry's scientific expertise, experience and data (chemicals, agrochemicals, consumer products, pharmaceuticals).

ECETOC collaborates world-wide across industry, academia and regulatory bodies to evaluate the safe use of chemicals and offers Unique Capacity Building to global stakeholders.

ECETOC does not lobby or engage in public policy advocacy. It:

- Anchors quality regulation with quality science
- Makes expertise available to decision takers
- Engages in the "debate"
- Advocates good science with objectivity & respect for different positions.

## Tools recognised by REACH

ECETOC's Targeted Risk Assessment (TRA) tool calculates the risk of exposure from chemicals to workers, consumers and the environment. It has been identified by the European Commission's Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as a preferred approach for evaluating consumer and worker health risks (ECHA, 2010a,b).

ECHA. 2010a. REACH Technical Guidance on information requirements and chemical safety assessment, Chapter R14: Occupational Exposure Estimation. European Chemicals Agency, Helsinki, Finland.

ECHA. 2010b. Guidance on information requirements and chemical safety assessment, Chapter R15: Consumer Exposure Estimation (Version 2, April 2010). European Chemicals Agency, Helsinki, Finland.

## Award-winning work

In 2013, ECETOC's work on identification and evaluation of endocrine disrupting chemicals won 'Best Published Paper Advancing the Science of Risk Assessment', an award from the American of regulatory concern' provides scientific input on the evaluation criteria for endocrine disrupters, something which is still not well-defined by chemical regulation today.

## Purpose

ECETOC's purpose is to develop concepts, data and positions which underpin the use of scientific principles in the translation of policy into regulation in Europe: to enable the benefits of chemicals to be realised while protecting human health and the environment.

## Values

ECETOC has strong values of science and integrity; it works by establishing objective positions and then moving forward, not backwards from a predetermined view.

## Vision

ECETOC will be the partner of choice focusing and engaging industry expertise for the European Commission, ECHA, and EFSA in the development of practices and concepts based on science as policy becomes embodied in regulations.

## Mission

To promote the use of good science in human and environmental risk assessment of chemicals, biomaterials and pharmaceuticals.

# MEMBERSHIP

## Benefits of membership

### Influence

- As a recognised scientific NGO, ECETOC is differentiated from industry trade associations and can influence development of science policy regulation by providing industry scientific leadership to develop and translate science and technical data to enhance and improve risk assessment. For example, the ECETOC-developed TRA (targeted risk assessment tool) is now used in approximately 80% of all REACH dossiers.
- Shape the European scientific agenda. For example, WHO/ECETOC Workshops on Mode of Action
- Observer status at ECHA RAC & MSC Meetings
- ECETOC Expert meeting on “low dose” attended by academic & regulatory agencies from Europe, USA & Japan
- Influence ECETOC’s scientific agenda by suggesting subjects for the work programme and providing a representative for the Scientific Committee

### Capacity Building

- Through use of expert meetings, task forces, workshops & facilitating science research ECETOC provides a platform for training and development of scientists engaged in the use of science in regulatory risk assessment.

- Engage with and tap into the expertise of a global network of top quality scientists

### Networking

- Participate in ECETOC task forces, workshops and other meetings
- Access ECETOC’s dedicated members’ website, which includes updates and revisions to ECETOC-developed tools, reports and workshops.

## Join ECETOC

By joining ECETOC, you will contribute to the safety of chemicals, pharmaceuticals and biomaterials and the long-term sustainability of the industry, as well as demonstrating a commitment to the Responsible Care guidelines created by the International Council of Chemical Associations (ICCA).

Membership is open to companies who manufacture or use chemicals (see [www.ecetoc.org/membership](http://www.ecetoc.org/membership) for more details).

### To apply for membership

Contact the ECETOC Secretariat:

Telephone: +32 2 675 3600

Email: [info@ecetoc.org](mailto:info@ecetoc.org)

Or write to: ECETOC,  
Avenue E. Van Nieuwenhuyse 2, bte.8,  
B-1160, Brussels, Belgium



## ECETOC Member Companies

During 2013, ECETOC membership comprised the following 43 companies:



\* = Associate member companies

## MESSAGE FROM THE CHAIRMAN

*“An essential ability required in the workplace today is the capacity to manage and adapt to organisational change whether planned or unforeseen...”*

Over recent years, accelerating globalisation, technological advances and financial constraints have resulted in a constantly evolving business environment. So, an essential ability required in the workplace today is the capacity to manage and adapt to organisational change whether planned or unforeseen.

Thus, in 2013, the ECETOC Board developed a plan with 4 main aims:

- Improve engagement with Membership to ensure ECETOC activities are aligned with the needs of our Membership and develop stronger relationships with European regulatory bodies;
- Maximum Delivery and Effectiveness of ECETOC Science by improving communication, translation and dissemination of ECETOC output;
- Resource management to introduce a flexible resource structure that is capable of responding effectively to the demands of the Membership while ensuring continuing strong financial stability;
- Work closely with ECHA to enhance the quality and application of the TRA in different areas.

For the first aim to improve engagement with the membership, and following the formula of the already successful Annual Environmental Progress Review meeting, we organised a Human Health Scoping Meeting that was held in early 2014 to collect ideas and suggestions for topics that ECETOC should be addressing over the coming years. The results will be discussed in the Technical Meeting following the 2014 Annual General Meeting. We have also initiated a Liaison Team with members from the Board and

Scientific Committee to strengthen links with European Institutions such as ECHA and JRC.

For the second aim, we are investing in new audio-visual equipment to allow better participation of individuals in meetings at distant locations.

We also are in the process of redesigning the ECETOC website to maximize the visibility of ECETOC and its output, and to reach out to potential new member companies. This new website will also address phenomena such as social media and mobile adaptability which are revolutionising the dissemination of knowledge. ECETOC reports will be easily accessible in a choice of formats with the added advantage of being fully indexed by search engines to maximise their visibility.

Social Media and online science networks continue to help us to deliver our science and draw in the next generation of scientists, while the introduction of Science News Flashes provides an understanding of our output in a language that everyone can understand.

For the third aim of the plan, and following the sad loss of Christa Hennes in December 2013 and anticipating the retirement of Henk Vrijhof in January 2014, ECETOC decided to meet the scientific demands placed upon it by the Membership and the current financial climate by adopting a flexible scientific staffing model using contracted experts to meet demand. The results of this model will be evaluated at the end of 2014 and, if necessary, other staffing models will be considered.

The 4th aim is ECETOC's commitment for continued support to enhance the use and value of the Targeted Risk Assessment Tool (TRA) in REACH legislation: This year, ECETOC

started working with ECHA on the scope, roles and organisation of the TRA for worker protection with CHESAR (ECHAs Chemical Safety Assessment and Reporting Tool for Registrants). This is part of a continuing programme to support the enhancement and development of the TRA tool that is used by the majority of organisations to comply with REACH registration.

While the actual organisation is small and highly efficient and cost effective, the backbone and strength of ECETOC is in the membership and its networks. It is therefore

vitaly important that if industry wants to influence Health and Environmental Topics of (i) Regulatory Scientific relevance, (ii) Immediate, impending or future scientific importance to enhancing Risk Assessment, then ECETOC is the platform providing these opportunities and I ask the membership to participate in and support ECETOC activities at all levels.

*Martin Kayser*  
*Chairman of the Board of Administration*



# 2013 KEY FACTS

During 2013, ECETOC:

- Published 11 reports (see page [47](#)), consisting of:
  - 7 Technical Reports
  - 4 Workshop Reports
- Published 7 papers as external publications (see page [48](#))
- Won the American Society of Toxicology Award for 'Best Published Paper Advancing the Science of Risk Assessment'. Full details were given in the 2012 Annual Report: visit <http://bit.ly/ecetoc-news-20120306> for further details.
- Conducted a survey which showed that the European regulatory science community recognises and appreciates the support ECETOC gives to science-based regulation. Further details available at <http://bit.ly/ecetoc-news-20130725>.
- Concluded 9 task forces (see page [16](#))
- Launched 6 new task forces (see page [26](#))
- Progressed a further 4 task forces
- Organised 4 workshops (see page [34](#)) and 3 meetings at third party events (see page [40](#))
- Welcomed Sumitomo Chemical as a new member company
- Joined the WHO Chemical Risk Assessment Network (effective January 2014)



## ECETOC BOARD OF ADMINISTRATION

The Board of Administration is empowered by the Annual General Meeting with the management and administration of ECETOC and delegates these tasks on a daily basis to its Secretary General.

The Board is composed of at least six member company representatives. Two Board members are entitled to represent the Associate members. Board members have a two-year mandate and are responsible for the overall policy and finance of the association. The Board is also responsible for appointing the members of the Scientific Committee.

Member companies may propose candidates for the Board; these candidates must have managerial duties within their company and possess scientific and technical experience.

At the 2013 AGM, the Chairman welcomed Sumitomo Chemical Europe, member of ECETOC since 1 January 2013 and represented by its official delegate, Dr. Tokuo Sukata.

The Chairman also welcomed the new ECETOC Secretary General Dr Alan Poole, successor to Dr. Neil Carmichael since 1 October 2012.

### Election of Board Members:

- Dr. Peter Hertl (Syngenta Crop Protection AG), Dr. Thomas Jostmann (Evonik Industries AG), Dr. Martin Kayser (BASF) & Dr. Anne Wallin (Dow Europe GmbH) were unanimously re-elected to the ECETOC Board.
- Dr. Craig Nessel (ExxonMobil Biomedical Sciences Inc.) & Dr. Karen Niven (Shell International Ltd) were unanimously elected as new members to the ECETOC Board.

## ECETOC Board Members (December 2013)



**Martin Kayser**  
*BASF*  
(Chairman)



**Steve Rumford**  
*AstraZeneca*  
(Vice-Chairman  
and Treasurer)



**Julia Fentem**  
*Unilever*



**Petra Hanke-Baier**  
*Procter & Gamble*



**Peter Hertl**  
*Syngenta*



**Thomas Jostmann**  
*Evonik Industries*



**Craig Nessel**  
*ExxonMobil*



**Karen Niven**  
*Shell*



**Robert Rickard**  
*DuPont*



**Anne Wallin**  
*Dow*

## REPORT FROM THE SECRETARY GENERAL

***“Currently the ECETOC TRA tool is used in approximately 80% of REACH dossiers so the value of improvements in the scope and friendliness of this tool are self-evident...”***

In 2013, despite the long term illness and tragic loss of Dr Christa Hennes, we set the ground for building and developing the future of ECETOC. One thing we did was to simplify how we work with less time spent on internal administrative procedures and more focus on addressing the needs of our membership and stakeholders. We set ourselves the task of becoming more responsive to membership needs by expanding the consultation process already developed for environmental sciences to human health and exposure. We also looked at ways of improving our science communication and delivery as well as reconfirming our commitment to enhance and develop the use and value of the TRA for both the industry and regulatory community.

During 2013, ECETOC published 7 manuscripts, 11 ECETOC Reports and hosted 4 workshops on topics ranging from Modes of Action to Endocrine Disrupter low dose effects. This diversity of activities, whilst a strength of ECETOC, can also conflict with

continuing resource constraints so we must become more focused on what we need to do and simplify how we do it.

As indicated above, in 2013 we set ourselves four strategic objectives.

The first was to improve the focus of what we do to ensure we meet the needs of our Membership. In early 2014 we held a human health and exposure scoping meeting and an environmental planning meeting to find out where the membership and other stakeholders think ECETOC should be applying resources. We will be using wider membership consultation to continue implementing our work in line with new scientific developments with potential to influence risk assessment.

To set the foundation of the second objective of improving quality of information and communication, we have developed science news flashes to explain the value and application of our science in a language

everyone can understand. However, we need to continue working to improve the added value of what we do to help enhance the risk assessment processes. We are in the process of installing new audio-visual technology to facilitate work processes particularly interactions and communication in task forces to reduce the need for travel and time spent out of the office. We have also designed, and in 2014 will introduce, a new ECETOC website providing easier navigation and access to individual articles and reports.

The third area is flexible resource management and we will continue to drive science forward by working with a dedicated network of consultant scientists to support the excellent work of the small, highly efficient secretariat.

Finally we will work closely with ECHA to enhance the quality and application of the TRA in different areas. Currently the ECETOC TRA tool is used in approximately 80% of REACH dossiers so improvements in the scope and friendliness of this tool is self-evident.

So in conclusion, even in continuing difficult times, we have established the foundation for building the future of ECETOC. With continued member support and stakeholder involvement we can build on and improve the service and value offered by ECETOC.

*Alan Poole*  
*Secretary General*



## SCIENCE PROGRAMME

### Foreword from the Scientific Committee Chairman

***“We bring people together,  
discuss and present the issue at stake, help to achieve  
consensus,  
and communicate this...”***

It is a pleasure and an honour to contribute as the new Chairman of the Scientific Committee to ECETOC's Annual Report. 2013 was not an easy year and will be remembered as one of profound change.

Our Human Health Sciences Manager Christa Hennes passed away after a long and courageous battle against a long-term illness. Despite all of the discomfort she remained active, contributing to task forces, workshops and the meetings of the Scientific Committee during this time. She truly is an example of devotion and the will to push forward even when the going gets really rough.

The second change in 2013 was the decision of Fraser Lewis to hand over as the Chair of the Scientific Committee. I would like to express my gratitude to him on behalf of ECETOC's staff, the Scientific Committee and personally for his work as Chairman over the last 4 years. I enjoyed his straightforward approaches and effectiveness as our

committee's leader. I am very glad to say that he will continue to work as a member of the Scientific Committee.

Work pressure is a matter of fact in all of our lives, and this means that we cannot always devote the amount of time we would wish to, in order to get the perfect “product”. This applies to ECETOC's staff, members of the Scientific Committee and also to me. As a consequence, we need to think how we can manage the challenges that face us in a most effective way. For the work at ECETOC this means that we have to set priorities, and carefully discuss which of the topics that interest our membership will require the initiation of a task force or a workshop. In a way it is good that our membership requires more work from ECETOC than we actually can deliver, because it indicates that ECETOC matters and contributes to their success. In the current situation, however, we need to match work requirements with the available resources while at the same time using



innovative ways to continue that high output we have seen in the past.

In the past year, the Scientific Committee has made considerable progress on some key areas of our science strategy. We have had 19 active task forces and 4 workshops as you will see in this report. We also see a shift in the final product of our activities in terms of an increasing number of publications in the peer reviewed scientific literature. During 2013, we published 7 papers, including two entire special issues. Both originated from the collaboration between ECETOC and EEMs and contained the individual contributions of the scientist participating as well as a conclusion and recommendation on how to tackle a specific scientific issue. I believe that this way of working is a core competency of ECETOC - we bring people together, discuss and present the issue at stake, help to achieve consensus, and communicate this - preferably in form of a publication. This way of communicating our achievements may in fact be more effective than the classical ECETOC “greenback” report.

Looking forward to 2014, ECETOCs key objective will be shaping and sharpening the role of ECETOC in science. As such, scoping meetings for human health and environment were held in early 2014 and we will introduce a change in the way that ECETOC operates. So far we have been mostly engaged on topics which were considered to require task force or workshop activities that would last for not more than 1 to 2 years. This has been quite effective to ensure a timely output, but has come at the expense of neglecting some of the more challenging questions. Prior to the Human Health Scoping Meeting, we therefore consulted with our membership to propose issues for ECETOC to work on for the next 3 – 5 years.

I am looking forward to exciting new activities as well as to a continuation of our successful work in classical task forces and workshops.

*Bennard van Ravenzwaay*  
*Chairman of the Scientific Committee*



Science Programme

## Highlights of 2013

Completed task forces

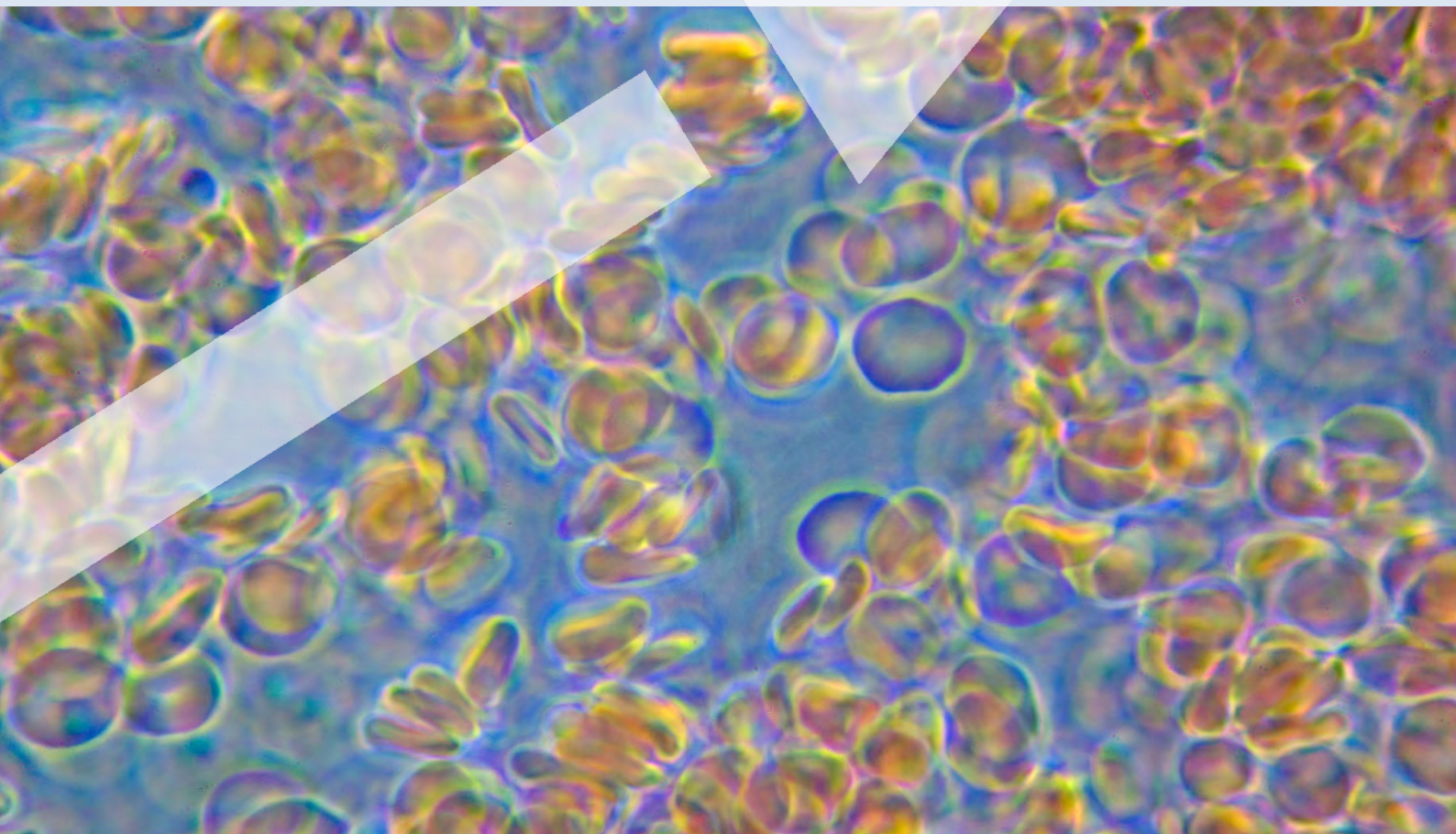


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<https://www.flickr.com/photos/nebarnix/303799491>

Science Programme • Highlights of 2013 • Completed task forces

**Use of category approaches, read-across and (Q)SAR: General considerations**

*Strategic Science Areas:* • Integrated testing strategies

Read-across has generated much attention since it may be used as an alternative approach for addressing the information requirements under regulatory programmes, notably the EU's REACH regulation. Read-across approaches are conceptually accepted by ECHA and Member State Authorities (MS) but difficulties remain in applying them consistently in practice. Technical guidance is available and there are a plethora of models and tools that can assist in the development of categories and read-across, but guidance on how to practically apply categorisation approaches is still missing.

The Task Force had the objective of summarising guidance and tools available, reviewing their practical utility and considering what technical recommendations and learnings could be shared more widely to

refine and inform on the current use of read-across.

The full insights were published in November 2012 in Technical Report No. 116. However, the task force also published a paper in the October 2013 issue of *Regulatory Toxicology and Pharmacology* which focusses on describing some of the technical and practical considerations when applying read-across under REACH. Since many of the deliberations helped identify the issues for discussion at a recent ECHA/Cefic LRI workshop on “read-across”, summary outcomes from this workshop are captured where appropriate for completeness.

Patlewicz G, Ball N, Booth ED, Hulzebos E, Zvinavashe E, Hennes C. 2013.

Use of category approaches, read-across and (Q)SAR: General considerations  
*Regulatory Toxicology and Pharmacology* 67(1):1-12.  
[Doi 10.1016/j.yrtph.2013.06.002](https://doi.org/10.1016/j.yrtph.2013.06.002)

## Science Programme • Highlights of 2013 • Completed task forces

**Understanding the relationship between extraction technique and bioavailability***Strategic Science Area:* • Assessment of environmental fate and behaviour

In environmental risk assessment, chemical residues in soils and sediments are considered insignificant if they are bound to the solid matrix and hence are not available to plants and soil organisms. Improved understanding of the mechanisms of binding which can contribute to the rationale for defining appropriate extraction methods is important as well as the threshold where extractive techniques start to destroy the sample matrix. The aim of this ECETOC task force was to develop a standard framework for extraction methods which associates the extractable fractions with both a level of bioavailability and appropriate test organisms for the environmental compartment. It was considered vital to identify and define appropriate key terms, such as the residue categories (dissolved, rapidly desorbed, slowly desorbed, irreversibly desorbed and assimilated) as well as the terms bioavailable and bioaccessible, which are aligned with the various residue types within the framework model.

The framework provides a logical and reasoned sequence of extractions to enable

the quantitation of the dissolved and rapidly desorbed fraction (for the bioavailable residue) and, in addition, the slowly desorbed fraction (for the bioaccessible fraction). A selection of appropriate extraction solvents and parameters, which represent the best currently available approaches to determine each residue pool, is provided. Many of the extraction steps are conservative, providing enhanced extraction from the matrix than would be available to organisms in the environment.

The report is linked to ECETOC Technical Report no. 118 which provides expert guidance on how to incorporate non-extractible residues (NER) into environmental risk assessment schemes.

The ECETOC Technical Report no. 117: Understanding the relationship between extraction technique and bioavailability is freely available.

The Summary and PDF of the report are available at <http://bit.ly/ecetoc-tr117>

## Science Programme • Highlights of 2013 • Completed task forces

**Development of interim guidance for the inclusion of non-extractable residues (NER) in the risk assessment of chemicals***Strategic Science Area:* • Assessment of environmental fate and behaviour

There is general agreement that the formation of non-extractable residues (NER) in soil or sediment can have a significant impact on a chemical's behaviour in the environment and it is therefore important that they should form an integral part of the environmental risk assessment (ERA) of chemicals. However, the significance of NER and exactly how they should be considered in ERA remains unclear. There are two contrasting views of the role of NER. On the one hand, NER represents a hidden fraction of the original chemical capable of subsequent release and potentially causing harm. On the other hand, NER represents an effective and safe method of rendering the chemical innocuous and allowing slow degradation in the bound state to products that pose no harm. These contrasting views remain and guidance on how to incorporate information on NER into environmental risk assessment is lacking.

This ECETOC task force has established a scheme to be used in the environmental risk assessment of NER. The task force has, where

possible, suggested trigger values and provided further guidance on how to incorporate NER into ERA. The scheme includes a Tiered approach and has used case studies to demonstrate how it may be used as a practical approach to incorporating NER into the ERA of chemicals. Whilst the task force has developed this scheme, knowledge gaps remain where further work is required and these have been highlighted in the report.

This report has been developed in conjunction with the ECETOC Technical Report no. 117 in which an extraction methodology has been developed to determine the bioavailability of compounds to the appropriate test organisms for the particular environmental compartment.

Published as ECETOC Technical Report no. 118: Development of interim guidance for the inclusion of non-extractable residues (NER) in the risk assessment of chemicals, the report is freely available and can be downloaded via <http://bit.ly/ecetoc-tr118>



Science Programme • Highlights of 2013 • Completed task forces

**Evaluation of systemic health effects following dermal exposure to chemicals**

*Strategic Science Areas:* • Integrated testing strategies

Exposure to chemicals can occur through the mouth, nose or the skin. While a lot of work has been done studying health risks of chemicals taken up through the mouth and nose, less has been done on health risks caused by chemicals getting into the body through the skin. Chemical legislation, most notably REACH, does however require information on possible health risks from dermal exposures. This ECETOC Report has therefore been developed by this task force to provide a step-wise approach for assessing and understanding health risks of substances that get onto the skin either as a solid, a liquid or when sprayed as an aerosol.

The value of the ECETOC document is that it uses a decision-tree type approach that can

be used by both experienced and less experienced scientists to provide relatively simple, or if necessary refined, estimates of health risk. Several examples are provided guiding the reader through the step-wise approach. While the document is mainly for skin exposures occurring in the work place, it can also be used by those scientists interested in assessing risks from skin exposures in other settings.

The document is published as ECETOC Technical Report 119: Evaluation of Systemic Health Effects Following Dermal Exposure to Chemicals. The Summary and free PDF of the report are available at <http://bit.ly/ecetoc-tr119>

Science Programme • Highlights of 2013 • Completed task forces

**Activity-Based Relationships for Aquatic Ecotoxicology Data:  
Use of the Activity Approach to Strengthen MoA Predictions**

*Strategic Science Area:* • Biodiversity and ecosystems

The relationship between the toxicity of narcotic chemicals and the octanol water partition coefficient (KOW) has been widely explored. An alternative but closely related property can be used to directly frame toxicity within the concept of phase equilibrium thermodynamics. This property, termed chemical activity, is inversely proportional to solubility, proportional to toxicity and should be applicable for the prediction of effects in aquatic species.

The ECETOC document employs an extensive set of existing data, and provides a proof of concept for the relationship between chemical activity and toxicity for narcotic chemicals. The task force used published

methodology and freely available software to classify the data according to Mode of Action (MoA). The analysis of MoA 1 (non-polar narcosis or baseline toxicity) substances shows promise as an alternative to KOW-based predictions of effect. The data also brings to light a lack of high quality chronic aquatic toxicity data in general and in particular for substances outside the MoA 1 domain.

The document is published as ECETOC Technical Report 120: Activity-Based Relationships for Aquatic Ecotoxicology Data: Use of the Activity Approach to Strengthen MoA Predictions, and can be freely downloaded via <http://bit.ly/ecetoc-tr120>

## Science Programme • Highlights of 2013 • Completed task forces

**Efficacy and Safety of Antidotes for Acute Poisoning by Cyanides***Strategic Science Area:* • Risk, hazard and precaution

When it happens, cyanide poisoning can have very serious neurological consequences that may result in severe disability and death. Cyanide poisoning may occur after swallowing of, inhalation of, or skin contact with hydrocyanic acid, cyanide salts, or cyanide forming compounds (cyanogens, e.g. nitriles or amygdalin), or from smoke inhalation. So far, there has been no recognised consensus on when to apply the various antidotes being used across the world.

Therefore, the task force reviewed in this report the efficacy, efficiency, safety, and practicality of the various antidote regimes used under different poisoning circumstances. The review was based on an extensive literature survey and analysis and statistical evaluation of more than 400 published and unpublished cases of poisoning by cyanides.

The report concludes that certain antidotes (sodium thiosulphate, amyl nitrite and hydroxocobalamin), when administered alone,

counteract moderate to severe poisoning. The combination of sodium nitrite and sodium thiosulphate, with or without amyl nitrite, also was effective in severe poisonings. Dimethylaminophenol and sodium thiosulphate are at least as effective in moderate poisonings, probably (few actual cases) also in severe cases. Because of significant side effects di-cobalt-EDTA is not recommended. Oxygen is not regarded as an antidote, but is an important supportive treatment. The final choice of antidote additionally depends on the practicality, e.g. cold storage requirement in a tropical country, or high price in developing countries. Recommendations are also given for the treatment of poisoned children, or mass poisonings and for use by first aiders, e.g. in industry.

Published as ECETOC Technical Report no. 121: Efficacy and safety of antidotes for acute poisoning by cyanides, the report is freely available and can be downloaded via <http://bit.ly/ecetoc-tr121>

Science Programme • Highlights of 2013 • Completed task forces

## Guidance on classification for reproductive toxicity under the globally harmonised system of classification and labelling of chemicals (GHS)

*Strategic Science Area:* • Risk, hazard and precaution, • Reproductive health

The Globally Harmonised System of Classification (GHS) is a framework within which the intrinsic hazards of substances may be determined and communicated. It is not a legislative instrument per se, but is enacted into national legislation with the appropriate legislative instruments. GHS covers many aspects of effects upon health and the environment, including adverse effects upon sexual function and fertility or on development. Classification for these effects is based upon observations in humans or from properly designed experiments in animals, although only the latter is covered herein. The decision to classify a substance based upon experimental data, and the category of classification ascribed, is determined by the level of evidence that is available for an adverse effect on sexual function and fertility or on development that

does not arise as a secondary non-specific consequence of other toxic effect.

The findings of the task force were published in *Critical Reviews in Toxicology*. The article offers guidance on the determination of level of concern as a measure of adversity, and the level of evidence to ascribe classification based on data from tests in laboratory animals.

Moore N, Boogaard PJ, Bremer S, Buesen R, Edwards J, Frayse B, Hallmark N, Hemming H, Langrand-Lerche C, McKee RH, Meisters ML, Parsons P, Politano V, Reader S, Ridgway P, Hennes C. 2013.

Guidance on classification for reproductive toxicity under the globally harmonized system of classification and labelling of chemicals (GHS). *Critical Reviews in Toxicology* 43(10):850-891

(Doi: [10.3109/10408444.2013.854734](https://doi.org/10.3109/10408444.2013.854734))

## Science Programme • Highlights of 2013 • Completed task forces

**Poorly Soluble Particles / Lung Overload***Strategic Science Area:* • Risk assessment of nanomaterials

Despite being regarded as biologically inert, many poorly soluble substances can still cause toxicity when high concentrations of small particles are inhaled repeatedly over a long time. This phenomenon is known from studies in laboratory animals as 'lung overload'. Normally, it begins with a reduction of lung clearance (less particles are removed due to diminished alveolar macrophage activity), followed by lung inflammation. This happens in all animal species, including hamster, mouse, rat, and primates. Rats appear to be particularly sensitive and eventually some develop lung tumours. The other species are less sensitive to these inflammatory changes and do not develop lung tumours.

The toxic effects are mainly caused by 'oxidative stress' and are independent of particle size (micro, nano, fine). Each species has a different level and pattern of oxidative stress and toxicity, which is probably related to differences in particle retention,

distribution, clearance and detoxification in the lung.

So far, using epidemiological studies, lung tumours from particle overload have not been found in humans.

The animal studies indicate a clear toxicological threshold for these inflammatory events related to the dose of inhaled particles (no adverse effect level, NOAEL), and also for the development of tumours in the rat. This enables, for instance, the derivation of a no-effect level (DNEL) in humans or the setting of an occupational exposure limit value (OEL). Direct extrapolation of the effect levels from animals to humans (1 to 1) is warranted.

The findings of the task force are published as ECETOC Technical Report 122: *Poorly Soluble Particles / Lung Overload*. The report is freely available and can be downloaded at <http://bit.ly/ecetoc-tr122>



## Science Programme • Highlights of 2013 • Completed task forces

**Environmental Exposure Assessment of Ionisable Organic Compounds**

*Strategic Science Areas:* • Assessment of environmental fate and behaviour, • Risk, hazard and precaution

When predicting the concentration of an ionisable chemical in the environment (an important step in risk assessment), it should be realised that the compound may have different key properties (acidity, partitioning and sorption) depending on pH, ionic strength, etc. While focusing on ionisable organic chemicals, particularly pharmaceutical ingredients and agrochemicals, this report explains the difficulties in applying current international standard methods (OECD test guidelines). Only hydrolysis and biodegradation can be measured as usual. Alternatively, if no measurement exists, the key data can be obtained mathematically, based on structural similarity. This works better for ionisable acids than for bases. Computerised 'chemical space' models can show the chemical's distribution into the environment (partitioning) at different acidities (pH values).

The report makes specific recommendations to take ionisability into account when measuring or estimating the acidity, sorption and partitioning. This should lead to more accurate prediction of environmental (wastewater effluent) concentrations and proper categorisation of ionisable chemicals before they are designated accumulative in environmental organisms or persistent in the environment.

The report is published as ECETOC Technical Report 123: Environmental Exposure Assessment of Ionisable Organic Compounds. The report is freely available and can be downloaded at <http://bit.ly/ecetoc-tr123>

Science Programme • Highlights of 2013

## Task forces established

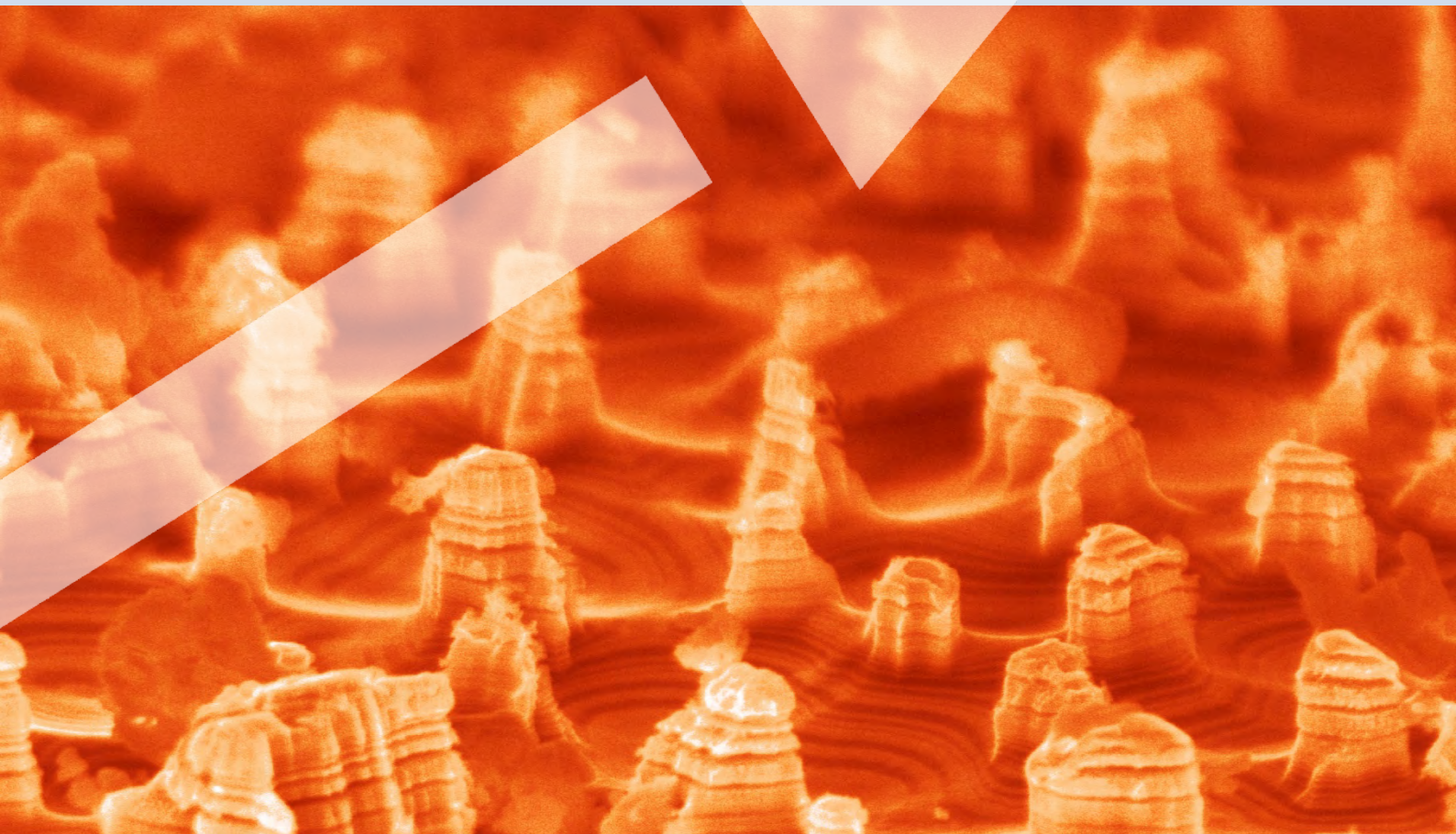


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## Science Programme • Highlights of 2013 • Task forces established

### Chemical risk assessment - ecosystem services

*Strategic Science Areas:* • Biodiversity and ecosystems

• Risk, hazard & precaution. • Science in society

Assessing the risks of chemicals to man and the environment is based on the concept of comparing exposure to chemicals with their respective hazardous properties. However, there are differences in the criteria for deciding whether the level of exposure represents an acceptable or unacceptable risk.

For man, decision criteria are focused on protecting the individual and regulations are applied relatively consistently around the globe. For the environment, protection goals are less clearly defined and not applied consistently in regional regulations.

Regional environmental policies seem to take a cost-benefit approach to environmental impacts. There are two possible extremes for doing this: i) a precautionary approach aiming for zero release of chemicals into the environment; ii) uncontrolled release with no effective management to mitigate impacts. Most environmental regulatory schemes adopt an approach somewhere between these extremes.

Discussion of current chemical regulation schemes has led to calls for changes in the way environmental toxicity thresholds are

derived. The use of limited species toxicity tests and application factors is tenuously linked to protection goals and could be over-protective in some cases or under-protective in others. Given that there are relatively few examples of major impacts e.g. TBT, DDT, from the thousands of chemicals in commerce, it may be that the current approach tends to be over-protective. This could be restricting the societal benefits of chemicals. On the other hand the uncertainties in the approach may underestimate effects, for example, in potentially sensitive ecosystems such as coastal marine reefs or in assessing endocrine disruption of chemical mixtures.

In addition to discussions for changes in current risk assessment schemes, there are ongoing policy discussions on the use of ecosystem services in setting protection goals.

The task force will investigate a new risk assessment paradigm based on a structured framework for identifying which ecosystem services might be affected by chemicals, setting protection goals and then assessing relevant risk assessment schemes.

## Science Programme • Highlights of 2013 • Task forces established

**Sufficiency of aquatic hazard information for environmental risk assessment***Strategic Science Area:* • Risk, hazard & precaution

There is currently no clear consensus concerning whether available information on the aquatic hazard of substances is sufficient for determining whether or not an environmental risk assessment may be required. This question gained relevance in the REACH context: under REACH, this uncertainty is leading to cautionary approaches as to when and how environmental risk assessments are undertaken. For example, the discussion on the scope of Exposure Assessment under REACH could not be settled due to the ongoing debate on whether the existing classification for aquatic hazards captures the risks to organisms in the soil and sediment compartment.

By undertaking this work, it can be anticipated that it will be possible to establish the extent to which aquatic hazard information is sufficient for managing risks in other compartments. This is not only expected to be relevant for the development

of waiver justification for REACH testing requirements, but also for other REACH responsibilities (e.g. the extent to which compartments beyond the aquatic should be evaluated within CSAs).

The task force will [1] confirm the coverage of current C&L for the environment; [2] confirm the extent to which the existing system for describing the aquatic hazard of substances is protective for risks in the compartments water, soil, and sediment; [3] identify those substance types for which a better understanding may be required where a lack of aquatic hazard may relate to potential risks in the compartments soil and sediment; [4] review available information acquisition strategies for obtaining hazard information in soil and sediment with the aim of identifying reliable approaches for improving the confidence in the environmental safety assessment; [5] have a workshop involving stakeholders to discuss the findings.

## Science Programme • Highlights of 2013 • Task forces established

### PBT Criteria (Annex XIII of REACH)

*Strategic Science Area:* • Integrated Testing Strategies • Risk, hazard & precaution

The need for an ECETOC Task Force on "PBT Criteria" has arisen following the amendment of Annex XIII of the REACH regulation of the EU (EC, 2011). This amendment introduces additional information for categorising chemicals as persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB). The new assessment information on B or vB properties warrants particular attention because, prior to the amendment, the bioaccumulation endpoints were largely reflective of the freshwater environment. The new information is clearly intended to extend the scope of the bioaccumulation assessment, to make it more protective of terrestrial species, including humans.

While the amended Annex XIII provides largely descriptive language, it proposes a weight of evidence approach to assess the information. Thus the recommendations in the latest guidance document (ECHA, 2008) are considered insufficient, and new ways are sought is proposed to accurately assess the PBT status of chemicals. The Task Force is cooperating with ECHA and its PBT expert group.

The task force will address the following terms of reference:

- Review and analyse the scientific literature to determine the environmental and human health relevance of the new Annex XIII assessment information.
- Review the availability of reliable and relevant test methods and/or models for providing the data required for application of the new assessment information.
- Identify the advantages, disadvantages and difficulties associated with the application of the new assessment information.
- Develop guidance as to what screening information is sufficient for a decision to conclude that a substance does not fulfil the criteria, based on existing guidance.
- Develop intelligent evaluation strategies for most common outcomes of the screening assessments where a PBT/vPvB conclusion cannot be reached, based on the available data.
- Address factors influencing the results of field studies on biomagnification and trophic magnification factors (BMFs, TMFs), as well as laboratory studies on BMFs.
- Advise on how to interpret biomonitoring (BM) information with regard to the criteria.
- Review and analyse the scientific literature related to P, B and T descriptors (other than those listed in the revised Annex XIII) that might warrant consideration for regulatory purposes.



- Identify the need for further research and potentially draft RfPs for projects (e.g. within the Cefic LRI programme) on the development of alternative information to assess P, B, or T properties.
- Serve as a channel for dialogue with ECHA, in order to:
  - contribute to the development of guidance as to how the new Annex XIII criteria should be interpreted and implemented;
  - comment on, and provide input to, the drafts of future revisions of those sections of the REACH guidance pertaining to PBT criteria;
  - propose the adoption, for regulatory purposes, of novel approaches and assessment information that might

usefully complement those in the current Annex XIII.

- Write a "Special Report" for publication by ECETOC.

#### References

EC. 2011. Commission Regulation (EU) No 253/2011 of 15 March 2011 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the registration, evaluation, authorisation and restriction of chemicals (REACH) as regards Annex XIII (text with EEA relevance). Off J EU L 69:7-12.

ECHA. 2008. Guidance on information requirements and chemical safety assessment Chapter R.7: Endpoint specific guidance, R.11: PBT assessment. European Chemicals Agency, Helsinki, Finland.

## Science Programme • Highlights of 2013 • Task forces established

## Thresholds in respiratory sensitisation

## Strategic Science Area: • Integrated Testing Strategies

Respiratory sensitisation gains increasing importance in EU regulations as an endpoint driving restrictive measures. The Biocidal Product Regulation suggests respiratory sensitisers for substitution. Under REACH, several substance classes are under discussion for inclusion into Annex XIV (Authorisation list) as Substances of Very High Concern based on their classification as respiratory sensitisers. Substance properties qualifying according to REACH Art 57 for 'equivalent concern' are "scientific evidence of probable serious effects to human health which give rise to an equivalent concern" comparable to CMR1A/1B substances.

The reasoning by some stakeholders<sup>(a)</sup> to subject respiratory sensitisers to authorisation under REACH is that:

- Occupational asthma is a serious, irreversible disease.
- At the present time, it is not possible to define reliable dose-response relationships and thresholds for most respiratory sensitisers.
- A broad scientific review on available evidence on thresholds in respiratory sensitisation would support discussions by risk assessors and risk managers on how to assess and regulate respiratory

sensitisers. For some substances, systematic investigations and reviews into thresholds of respiratory sensitisation are available.

Based on a review of the relevant literature, the task force will [1] summarise the current knowledge on mode of action of small molecules as respiratory sensitisers; [2] review the status of currently available animal models, human (*in vitro*) models, exposure and *in chemico* models; [3] define what endpoints can be used and what a threshold would be for each endpoint for respiratory hypersensitivity. How can these be distinguished from respiratory irritation? [4] conclude whether respiratory sensitisation can be regarded to be a threshold effect with reasonable certainty, and recommend appropriate experimental models or other approaches to derive safe concentrations.

The task force will write a technical report and a publication for the peer-reviewed literature.

<sup>(a)</sup> Ter Burg W, Jongeneel WP. Priority setting and Risk Management Option under REACH for sensitizers. RIVM letter report 601030001/2011.  
([www.rivm.nl/bibliotheek/rapporten/601030001.pdf](http://www.rivm.nl/bibliotheek/rapporten/601030001.pdf))

## Science Programme • Highlights of 2013 • Task forces established

### Grouping of nanomaterials

#### *Strategic Science Area:* • Risk assessment of nanomaterials

Currently, all forms of a substance, including its various nano-forms are covered in one REACH dossier, i.e. with one substance identity. It will, however, be necessary to perform separate, partly separate or additional safety assessments of nanomaterials. The REACH Implementation Project on Nanomaterials 2 (RIP-oN 2) project report, in clear consensus with industry, has outlined how to consider peculiarities of nanomaterials in the safety assessment. Ultimately this could lead to a full-blown testing program for each nanomaterial. Given the expected number of nanomaterials and modifications (size, shape, surface) of nanomaterials this would lead to an insurmountable amount of testing. On the other hand, it is obvious, that some, if not all, information on the hazard of a nanomaterial can be derived from the respective bulk material, from molecules or ions of its constituents and from similar nanomaterials. Such read-across has become part of the technical guidance documents (TGDs) and is already applied to chemicals (molecules, non-nano-forms). Classical read-across and grouping correlates structural properties with biological activity. However, according to ECHA, read-across in current applications is often not sufficiently detailed and justified.

Exposure to nanomaterials is not to a distinct species – a molecule – but to a population of primary particles and aggregates and agglomerates of various sizes and different surface coatings. Their composition depends on the use, release and uptake of the nanomaterial. This complicates classical risk assessment approaches and multiplies the need for hazard testing. At the same time, this provides an opportunity to develop more comprehensive grouping of nanomaterials for risk assessment, if the whole source-to-adverse-outcome pathway is taken into account (not limiting grouping to structure-activity relations).

The task force will [1] review and evaluate current concepts on grouping for (eco)toxicological assessment of nanomaterials; [2] integrate suitable individual concepts into a comprehensive guidance for grouping of nanomaterials, including efficient acquisition of data supporting the grouping of nanomaterials in line with requirements for REACH; [3] consider illustrative examples, and if possible, include them in the report; [4] communicate the guidance to those concerned.

## Science Programme • Highlights of 2013 • Task forces established

**Guidance for Effective Use of Human Exposure Data in Risk Assessment of Chemicals***Strategic Science Area:* • Chemicals in human tissue

The structures and processes by which risks are assessed and managed should themselves be risk-informed. This requires that full and proper account needs to be taken of the human exposure situation. Accepted practices for the hazard assessment of human health and environmental safety of chemicals include the use of models and analogues to fill data gaps for specific endpoints (either for single or multiple chemicals that share structural similarities or similarities in metabolism in mammals, fish and other organisms). For example, this approach is acceptable, with limitations, in preparing dossiers for REACH and in this respect the OECD has published guidance on the formation and use of chemical categories for data gap filling.

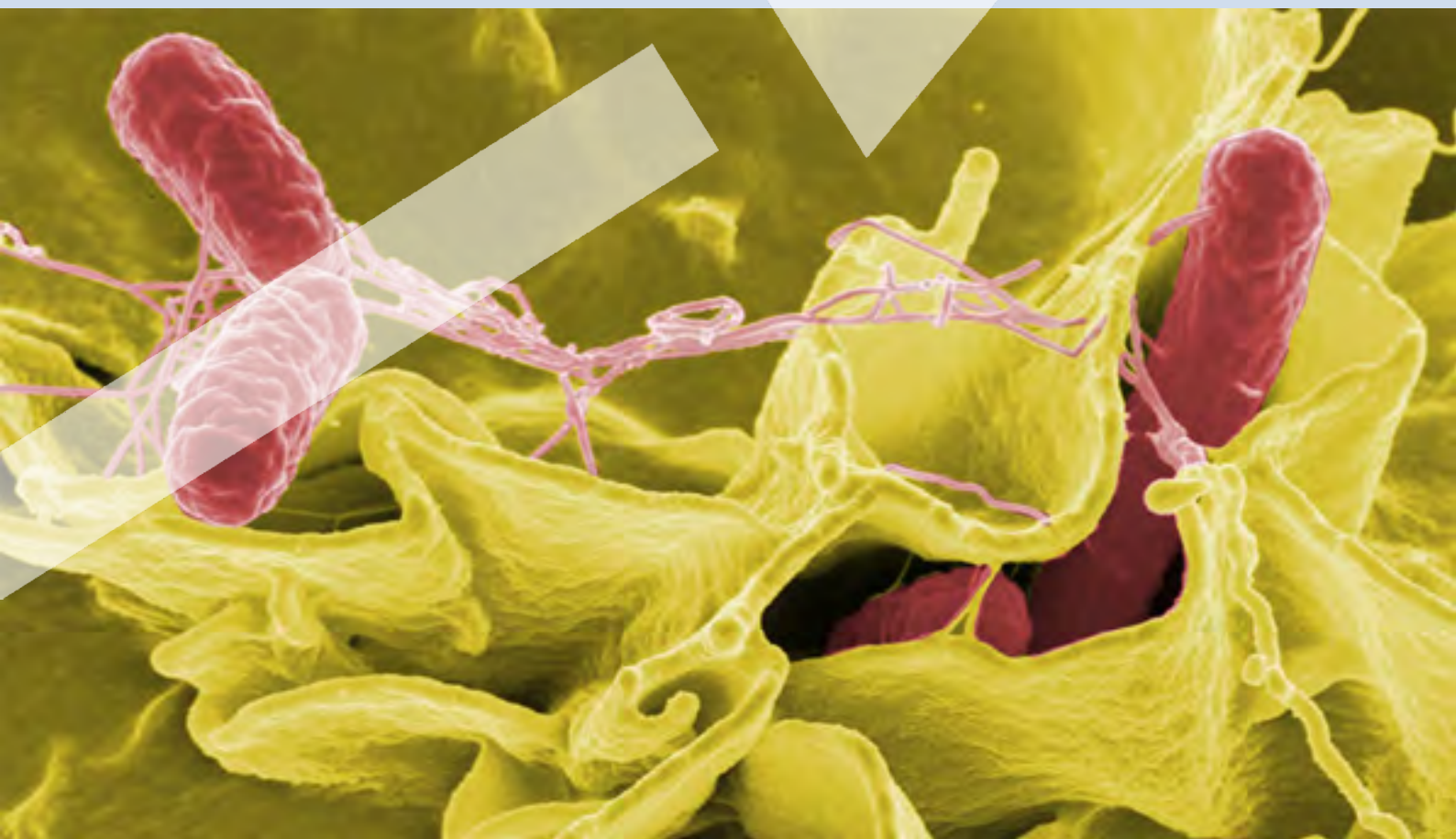
However, such a structured approach is absent for how human exposure data might be reliably assessed. Moreover, with an ever increasing number of models becoming available for addressing different aspects of human health exposure, it would appear prudent to identify best practices (which models might best be applied when and with

what purpose in mind). This is particularly relevant for chemical safety assessments on lower volume registrants under REACH, where it is generally acknowledged that there is a paucity of measured data and hence recourse to modelled approaches will be necessary.

The task force will [1] identify what types of exposure data are required for current and near future risk assessment purposes; [2] review current sources of exposure data /information with respect to these needs; [3] identify quality criteria for exposure data that enables different types of data to be suitably weighted and accounted for; [4] identify ways in which more efficient use of exposure data can be achieved (e.g. by utilising existing category and read across approaches, exposure banding); [5] develop a set of illustrative worked examples to support the validity and practicability of the framework and quality criteria; [6] organise a workshop with participation of key stakeholders for dissemination and discussion of the task force's work.

Science Programme • Highlights of 2013

## Workshops



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## Science Programme • Highlights of 2013 • Workshops

### 2013 Environment Progress Review

*07/08 February 2013, Brussels, Belgium*

In February, the environment progress review meeting took place with a large turnout of 34 scientists. This annual meeting sets out to inform and review the spectrum of ECETOC environmental activities, task forces, workshops and LRI projects.

The first day consisted of a review of existing / recent LRI projects. The second day focussed on identifying new ideas for ECETOC or LRI activities.

### Mode of Action: Recent developments, regulatory application and future work

*21-22 February 2013, Fleming's Hotel Wien-City, Vienna, Austria*

*Strategic Science Area: Risk, hazard and precaution*

Mode of Action (MoA) is a method that identifies the important steps in understanding how exposure to a toxic chemical leads to adverse health effects and, if such effects - usually detected in experimental rodents, have human relevance.

The use of MoA as a tool to address/reduce uncertainty about extrapolating toxic effects seen in animals to humans was addressed by ECETOC in 2009 at an ECETOC/ILSI Research Foundation/HESI Workshop to exchange views on conceptual approaches to the use of MoAs. One result of the 2009 meeting was that WHO/IPCS formed a global Steering Group, with experts from ECETOC, ECHA, EFSA, Imperial College, JRC, OECD, University of Ottawa, US EPA, ILSI/HESI and WHO, to co-ordinate implementation of an 'umbrella plan' of work.

While MoA is now accepted as good science and a value-adding, enabling tool, there is still some reluctance to use MoA in chemical regulation. The second ECETOC/WHO Workshop held in February 2013 explored the progress that had been made since 2009 in using MoA in chemical risk assessment and shared experiences of difficulties encountered in applying the MoA approach in the regulatory environment. The Workshop explored some of their causes and possible solutions together with recommendations how to move forward.

A description, including participants, and outcome of the MoA Workshop can be found in ECETOC Workshop Report no.26 which can be downloaded without charge. Executive summary and download link:

<http://bit.ly/ecetoc-wr26>

## Science Programme • Highlights of 2013 • Workshops

### 'Omics and Risk Assessment Science

25-26 February 2013, Málaga, Spain

*Strategic Science Area: Integrated Testing Strategies*



*Group photo of the workshop participants*

Participants included:

C. Barata, Institute of Environmental Assessment and Water Research, Spain; R. Brown, AstraZeneca, UK; N. Carmichael, Consultant, formerly ECETOC, France; M. Chamberlain, CXR Biosciences, UK; K. Chipman, School of Biosciences, University of Birmingham, UK; C. Corton, US EPA, USA; R. Corvi, Joint Research Centre of the European Commission, Italy; C. Elcombe, CXR Biosciences, UK; R. Frötschl, Federal Institute for Drugs and Medical Devices (BfArM), Germany; M. Galay Burgos, ECETOC, Belgium; T. Gant, Health Protection Agency, UK; N. Garcia-Reyero Vinas, Mississippi State University, USA; M. Hampel, Spanish National Council for Scientific Research CSIC, Spain; M. Heneweer, Shell, The Netherlands; J. Kleijnans, Maastricht University, The Netherlands; J. Lambert, US EPA, USA; A. Lampen, Federal Institute for Risk Assessment (BfR), Germany; B. Meek, University of Ottawa, Canada; J. Mestres, IMIM (Hospital del Mar Medical Research Institute), Spain; C. Morris, Cardiff University, UK; R. O'Loone, ILSI Health and Environmental Sciences Institute, USA; A. Piersma, RIVM, The Netherlands; B. Piña, Institute of Environmental Assessment and Water Research, Spain; A. Schrattenholz, ProteoSys, Germany; T. Sukata, Sumitomo Chemical Europe, Belgium; S. van der Vies, VU University Medical Center, Amsterdam, The Netherlands; B. van Ravenzwaay, BASF, Germany; D. Villeneuve, US EPA, USA; C. Wierling, Max Planck Institute for molecular Genetics, Germany.

## Science Programme • Highlights of 2013 • Workshops

'Omics is a general term used in biological sciences describing the study of genes and cells. For example, the study of DNA in a cell is termed genomics, the study of proteins - proteomics, metabolites - metabolomics and RNA transcripts - transcriptomics. There has been growing interest in the use of 'omics data for risk assessment of chemicals. In particular, how the combined analysis of transcriptomics, proteomics and metabolomics can be used to understand how chemicals produce toxic effects. The aim of this workshop, that attracted scientists from industry, regulatory agencies and academia (several European and North American Universities), was to review progress on the application of 'omics technologies to chemical safety and assess their potential impact on the risk assessment of chemical substances.

Using several worked examples and case studies, the participants of the workshop concluded that 'omics data are particularly valuable for understanding modes of action (MoA). By studying exposure-associated differential gene expression patterns, it is becoming possible to examine each key

event in the pathway leading from an early molecular event in a cell to an adverse outcome, such as liver disease, in an individual. Analysis of the most sensitive pathway for transcriptomics allows for a reasonable approximation of the NOAEL of an individual compound.

Progress is gaining pace and 'omics tools are being used to identify biomarkers and guide study design towards shorter, more targeted studies, with potential to reduce the numbers of animal studies currently required to assess chemical safety. While more work remains before it is possible to predict adversity from 'omics data, the workshop provided guidance on further standardisation of 'omics study protocols and how to obtain a better understanding of the association of differentially expressed genes with MoA. The information and ideas developed at the workshop add to the knowledge base that will ultimately result in improvements in human and environmental risk assessment.

The findings of the workshop can be found in ECETOC Workshop Report No.25: 'Omics and Risk Assessment Science, available without charge via <http://bit.ly/ecetoc-wr25>

Science Programme • Highlights of 2013 • Workshops

**Expert Panel to better understand Endocrine Disrupter Low Doses Effects**

22-23 April 2013, Barcelona, Spain

*Strategic Science Areas:* Reproductive health, Risk, hazard & precaution



*Group photo of the workshop participants*

Participants included:

R. Bars, Bayer CropScience, France; M. Blaude, WIV-ISP (Scientific Institute of Public Health), Belgium; A. Boobis, Imperial College London, UK; W. Dekant, University of Würzburg, Germany; I. Fegert, BASF, Germany; P. Foster, NIEHS, USA; M. Galay Burgos, ECETOC, Belgium; E. Gray, US EPA; J. Kanno, National Institute of Health Sciences, USA; A. Kortenkamp, University of London, UK; H. Leffers, Biobase, Denmark; D. Lewis Syngenta, UK; P. Matthiessen, Consultant, UK; L. Perharic, Institute of Public Health, Slovenia; A. Piersma, RIVM, Netherlands; R. Sharpe, MRC Edinburgh, UK.

## Science Programme • Highlights of 2013 • Workshops

An Expert Panel workshop was organised by ECETOC to discuss the controversy of the so-called low dose effects of endocrine disrupting chemicals, and to propose a possible research programme to throw more light on this area. The panel agreed that the only practical way to support or refute the proposed hypotheses is through the use of mechanistic mode of action, MoA/AOPs models focusing on key events, their quantitative description and dose-response characteristics. The concept here is to identify the key events of the mode of action of chemicals for which low-dose effects have been reported.

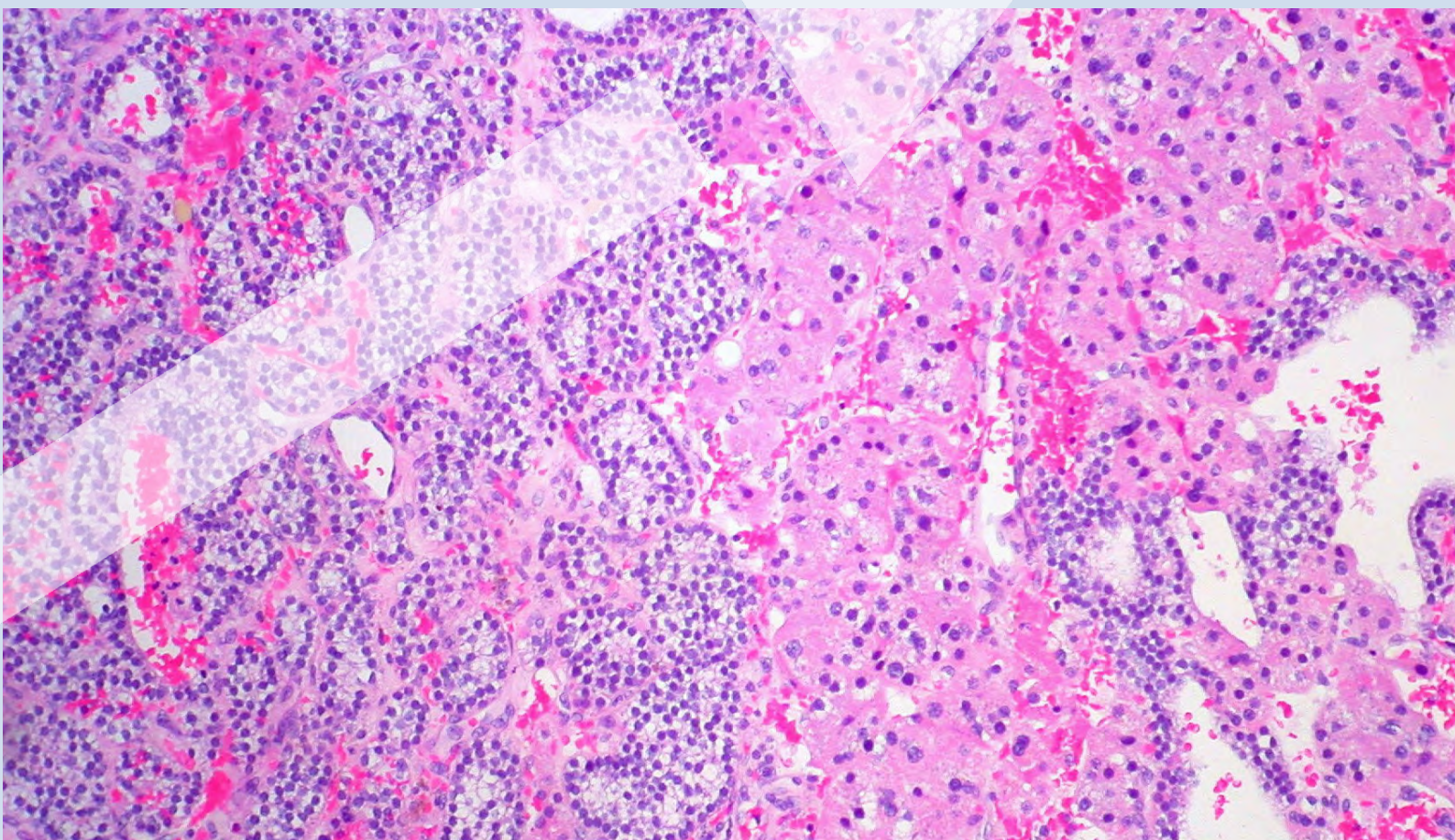
These key events will need to be characterised for a large range of doses, and the resulting datasets integrated through the

use of mathematical modelling using a system biology approach. Such models would then be interrogated to investigate whether or not low dose effects could indeed be occurring. Adverse outcome pathways, need to be integrated using an understanding of relationships between the ultimate adverse effect, key events, the site of possibly multiple action and the exposure. This is in agreement with the WHO-IPCS MoA/ AOPs concept (see for example ECETOC / WHO Mode of Action Workshop Report no.26, available via: <http://bit.ly/ecetoc-wr26>). It was recognised however, that as a first step there was a need to have an extensive review of the data already published. The outcomes of these discussions are compiled in ECETOC Workshop Report no.27 available via: <http://bit.ly/ecetoc-wr27>.



Science Programme • Highlights of 2013

Symposia and other meetings



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Science Programme • Highlights of 2013 • Symposia and other meetings

**2013 Annual Technical Meeting on *Exposure in Risk Assessment***

*13 June 2013, Brussels, Belgium*



***Professor Helmut Greim (Technical University Munich) addressed thresholds for genotoxic carcinogens***

The 2013 Annual General Meeting and Annual Technical Meeting (ATM) were held on June 13 at Martin's Central Park Hotel, Brussels. The broad objective of the ATM was to present ECETOC's work over recent years on science concepts for risk assessment, and in particular on new technologies. The day started with the Annual General Meeting (for members only), followed by the Annual Technical Meeting (for members or by invitation only), which was attended by 40 participants from member companies, partner organisations and regulatory bodies.

After an introduction by Ben van Ravenzwaay (BASF), the newly appointed Chairman of the Scientific Committee, the presentations were divided into 2 sessions:

**1. Developed Science Concepts for Risk Assessment - ECETOC Contribution and Leadership Role**

Chris Money (ExxonMobil but at time of publishing, Cynara Consulting Ltd.) kicked off with ECETOC's contribution and leadership role in science concepts for REACH.

Carlos Rodriguez (P&G) presented ECETOC activities on risk assessment of combined exposures to multiple chemicals.

Rémi Bars (Bayer CropScience) reviewed the past, present and future of endocrine disruption. He concluded that ECETOC was the first organisation to propose scientific criteria and still is actively contributing to the resolution of the ED debate. ECETOC's critical role on ED needs to be strengthened

with the issues to come: low dose/threshold/non monotonicity/"inadequacy" of regulatory guidelines studies for ED/mixtures of ED.

## **2. Developing Science Concepts for Risk Assessment - ECETOC Contribution and Leadership Role**

Helmut Greim (Technical University Munich) addressed thresholds for genotoxic carcinogens.

David Rouquié (Bayer CropScience) explored Mode of Action and risk assessment challenge, concluding that the general trend is to improve chemical risk assessment by using mechanistic information as proposed in the IPCS MoA framework. He also found that there is a need to build databases of known MoAs to make the best use of mechanistic information.

Saskia van der Vies (VU University Medical Center, Amsterdam) covered ECETOC's three

workshops on Omics in Risk Assessment, the latest of which was held in February 2013 and published its findings as Workshop Report No:25.

Johannes Tolls (Henkel) talked about increasing realism in environmental risk assessment, covering the EU Scientific Committees' view, ECETOC past and current contributions, and what needs to be done in addition.

Charles Eadsforth (Shell), in his speech on Bioavailability in Exposure Assessment, reviewed the work of three ECETOC task forces which were commissioned to address: 'Relationship between extraction technique and bioavailability' (Technical Report No:117), 'Develop interim guidance for the inclusion of NERs in ERA of chemicals' (Technical Report No:118) and 'Activity based relationships for aquatic ecotoxicology data' (Technical Report No:120 and paper in the open literature in preparation).

## Science Programme • Highlights of 2013 • Symposia and other meetings

### **Tiered approaches to assess complex mixtures and new developments in “omics” for use in risk assessment**

*2 Sessions jointly organised by ECETOC and ECPA at EUROTOX 2013, 04 September 2013, Interlaken, Switzerland*

The sessions included presentations highlighting the deliverables from various ECETOC Task Forces and ECETOC Workshops.

These presentations were published in the meeting proceedings.

### **Symposium on applications of proteomics & metabolomics in (eco)toxicological and biomedical research**

*Symposium at 11th ICEM, 05 November 2013, Foz do Iguassu, PR, Brazil*

The symposium was jointly organised by ECETOC and EEMS, the European Environmental Mutagen Society, as part of the 11th International Conference on Environmental Mutagens (ICEM) held from 3 to 8 November 2013 in Foz do Iguassu, PR, Brazil. There presentations on (i) the use of proteomics for the identification of compounds inducing reproduction toxicity, (ii) the sensitivity of metabolomics; a comparison of metabolomics and regulatory NOEL (no observed effect level) and LOEL

(lowest observed effect level) values in 28-day rat studies, (iii) a stem cell based metabolomics approach to detect embryotoxicity *in vitro*, and (iv) ‘omics sciences in (regulatory) toxicology: conclusions from ECETOC’s 3rd ‘omics workshop.

For more information, visit the ICEM web site: <http://www.icembrazil.org/icem/>

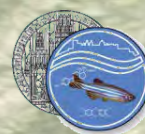
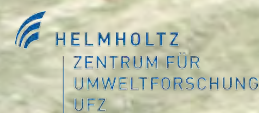


## Science Programme • Highlights of 2013

### Final activities of the FP7 EUROECOTOX project consortium



#### Project partners:



### EUROECOTOX network goes global

The EUROECOTOX project EU-FP7 funding finished at the end of 2012 but the feasibility and strategic importance of continuing the EUROECOTOX network was discussed at the final project meeting in Brno (Czech Republic). It was decided that from December 2012 the network would be administered by Dr Malyka Galay Burgos of ECETOC, one of the EUROECOTOX partners which has a proven track record in the use of alternatives to animals for environmental assessments since a task force in 2003.

In collaboration with other project partners, an action plan and task distribution to

maintain the network and define the focus to continue priority activities has been established in the past months. The main priorities for the forthcoming 2 years will be:

- maintenance and update of the EUROECOTOX website:
- publication of newsletters,
- organisation of a 2nd conference on alternatives for ecotoxicology in 2014.

Additionally, the EUROECOTOX network will reach a wider audience through involvement of HESI in future activities of the network. Discussions are currently in progress.



## Final activities of the FP7 EUROECOTOX project consortium

The EUROECOTOX consortium submitted final project deliverables to the EU. Most of these are publically available and can be consulted for download as EUROECOTOX documents through access at the website: <http://www.euroecotox.eu/>.

Furthermore, as an outcome of the Expert meeting in Leipzig, October 2011, a joint paper has been written by the consortium partners and invited experts, coordinated by S. Scholz. Entitled “A European perspective of alternatives to animal testing for environmental hazard identification and risk assessment”, this paper was submitted in July 2013 for publication as a commentary in the journal *Regulatory Toxicology and Pharmacology*. The paper has now been published on line: *Regul Toxicol Pharmacol*. (Dec. 2013) 67(3):506-30.

[doi: 10.1016/j.yrtph.2013.10.003](https://doi.org/10.1016/j.yrtph.2013.10.003).

A second paper entitled “Bottlenecks in the development and implementation of ecotoxicology” has been submitted to ALTEX, the Journal for Alternatives to Animal Experimentation by T. Braunbeck and co-authors.

Finally, the consortium partners have agreed to compile a book, based on current state of the art on alternative approaches in ecotoxicology and lessons learned during the project and related meetings. This book “Alternatives to testing of animals in environmental risk assessment” is in preparation and planned to be published by SETAC Press in 2014.



## Communicating the science

### Publications

ECETOC's primary outputs are state-of-the-science reviews that are compiled as a result of the scientific partnerships formed in the framework of ad-hoc issues-based task forces. These take the form of both ECETOC's own published reports and the articles published in the open scientific literature.

Technical Reports address specific aspects of the science used in evaluating the hazards and risks of chemicals to human health and the environment. (Note: Since 2009, 'Monographs', which were comprehensive reviews of generic topics or issues fundamental to the application of good science in evaluating the hazards and risks of chemicals, and 'Documents', which were scientific briefing papers addressing emerging issues, are also published as Technical Reports.

Workshop Reports are summaries of the discussions and conclusions derived from ECETOC sponsored scientific workshops.

Scientific Articles are publications in peer-reviewed journals.

JACC Reports (Joint Assessment of Commodity Chemicals) are comprehensive reviews of all available toxicological and ecotoxicological data on specific chemical substances, predominantly those having widespread and multiple uses. Each report presents a hazard assessment and identifies gaps in knowledge. The standard format may be extended in support of EU or other international risk assessment, or setting of an occupational exposure limit value.

Special Reports are compilations of data targeted to specific regulatory issues/demands.

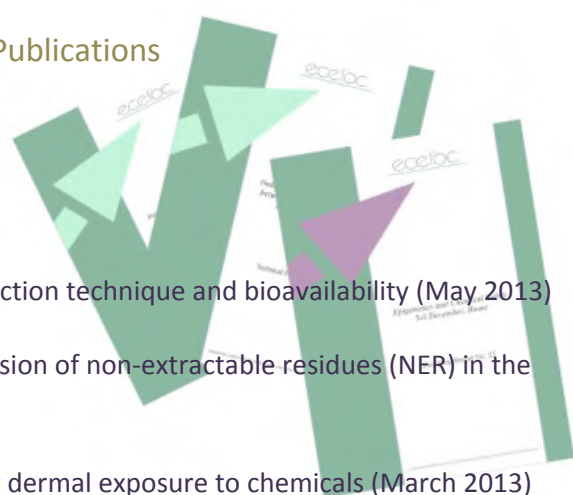
Please note that, as part of our continuing drive for efficiency and environmental care, all ECETOC publications are now distributed exclusively in electronic format. All reports can be freely downloaded from <http://www.ecetoc.org/publications>



Science Programme • Communicating the Science • Publications

## Reports published by ECETOC

### Technical Reports

- 
- TR 117      Understanding the relationship between extraction technique and bioavailability (May 2013)
- TR 118      Development of interim guidance for the inclusion of non-extractable residues (NER) in the risk assessment of chemicals (May 2013)
- TR 119      Evaluation of systemic health effects following dermal exposure to chemicals (March 2013)
- TR 120      Activity-Based Relationships for Aquatic Ecotoxicology Data: Use of the Activity Approach to Strengthen MoA Predictions (December 2013)
- TR 121      Efficacy and Safety of Antidotes for Acute Poisoning by Cyanides (November 2013)
- TR 122      Poorly Soluble Particles / Lung Overload (December 2013)
- TR 123      Environmental Exposure Assessment of Ionisable Organic Compounds (December 2013)

### Workshop Reports

- WR 24      Assessing Environmental Persistence  
6-7 November 2012, Paris (Published December 2013)
- WR 25      'Omics and risk assessment science  
25-26 February 2013, Málaga (Published September 2013)
- WR 26      Mode of Action: Recent Developments, Regulatory Applications and Future Work  
21-22 February 2013, Vienna (Published June 2013)
- WR 27      Expert Panel to better understand Endocrine Disrupter Low Doses Effects  
22-23 April 2013, Barcelona (Spain) (Published October 2013)

## Science Programme • Communicating the Science • Publications

### 2013 Articles published in the open scientific literature

van Ravenzwaay B, Dekant W, Vrijhof H. 2013.

Risk assessment of endocrine disrupting chemicals – Introduction to this special issue.

*Toxicology Letters* 223(3):269-270. [Doi: 10.1016/j.toxlet.2013.10.006](https://doi.org/10.1016/j.toxlet.2013.10.006)

Lewis RW. 2013.

Risk assessment of 'Endocrine Substances: Guidance on Identifying Endocrine Disruptors.

*Toxicology Letters* 223(3):287-290. [Doi: 10.1016/j.toxlet.2013.09.001](https://doi.org/10.1016/j.toxlet.2013.09.001)

Weltje L, Wheeler JR, Weyers A, Galay-Burgos M. 2013.

Refinement of the ECETOC approach to identify endocrine disrupting properties of chemicals in ecotoxicology.

*Toxicology Letters* 223(3):291-294. [Doi: 10.1016/j.toxlet.2013.02.019](https://doi.org/10.1016/j.toxlet.2013.02.019)

Fegert I. 2013.

ECETOC Florence workshop on risk assessment of endocrine substances, including the potency concept.

*Toxicology Letters* 223(3):310-314. [Doi: 10.1016/j.toxlet.2013.03.027](https://doi.org/10.1016/j.toxlet.2013.03.027)

Moore N, Boogaard PJ, Bremer S, Buesen R, Edwards J, Frayse B, Hallmark N, Hemming H, Langrand-Lerche C, McKee RH, Meisters ML, Parsons P, Politano V, Reader S, Ridgway P, Hennes C. 2013.

Guidance on classification for reproductive toxicity under the globally harmonized system of classification and labelling of chemicals (GHS)

*Critical Reviews in Toxicology* 43(10):850-891. [Doi: 10.3109/10408444.2013.854734](https://doi.org/10.3109/10408444.2013.854734)

Scholz S, Sela E, Blaha L, Braunbeck T, Galay-Burgos M, García-Franco M, Guinea J, Klüver N, Schirmer K, Tanneberger K, Tobor-Kapłon M, Witters H, Belanger S, Benfenati E, Creton S, Cronin MTD, Eggen RIL, Embry M, Ekman D, Gourmelon A, Halder M, Hardy B, Hartung T, Hubesch B, Jungmann D, Lampi MA, Lee L, Léonard M, Küster E, Lillicrap A, Luckenbach T, Murk AJ, Navas JM, Peijnenburg W, Repetto G, Salinas E, Schüürmann G, Spielmann H, Tollefsen KE, Walter-Rohde S, Whale G, Wheeler JR, Winter MJ. 2013.

A European perspective on alternatives to animal testing for environmental hazard identification and risk assessment.

*Regulatory Toxicology and Pharmacology* 67(3):506-530. [Doi 10.1016/j.yrtph.2013.10.003](https://doi.org/10.1016/j.yrtph.2013.10.003)

Patlewicz G, Ball N, Booth ED, Hulzebos E, Zvinavashe E, Hennes C. 2013.

Use of category approaches, read-across and (Q)SAR: General considerations

*Regulatory Toxicology and Pharmacology* 67(1):1-12. [Doi 10.1016/j.yrtph.2013.06.002](https://doi.org/10.1016/j.yrtph.2013.06.002)

Science Programme • Communicating the Science

Online communication



During 2013, ECETOC examined how best to maximise visibility for its output through the increased use of social media and ease of report download. Work began on a major upgrade to the public website which will be implemented Q3, 2014. The social media

linked to the public website, such as Twitter, LinkedIn and ResearchGate, gained in popularity with those who like to be kept informed of the latest news and developments from ECETOC.

Follow ECETOC at:



*Graphic: Social network by Sal Falco on Flickr*

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[https://www.flickr.com/photos/safari\\_vacation/7996585036/](https://www.flickr.com/photos/safari_vacation/7996585036/)

## Science Programme

### External representation

#### Representation at specific meetings

##### **5th SETAC Europe 23<sup>rd</sup> Annual Meeting: Building a better future: Responsible innovation and environmental protection**

12-16 May 2013, Glasgow, UK

ECETOC was represented by Malyka Galay Burgos (ECETOC)

##### **First annual International Environmental 'Omics Synthesis conference**

9-11 September 2013, Cardiff, UK.

ECETOC was represented by Malyka Galay Burgos (ECETOC)

##### **SETAC Europe 6th Special Science Symposium: Environmental Endocrine Disruptor Testing and Evaluation**

2 October 2013, Brussels, Belgium

ECETOC was represented by Malyka Galay Burgos (ECETOC)

##### **11th International Conference on Environmental Mutagens (ICEM 2013)**

3-8 November 2013, Foz do Iguassu, Brazil

ECETOC was represented by Alan Poole and Henk Vrijhof (both ECETOC)

##### **WHO/IPCS workshop on uncertainty in hazard assessment**

19-20 November 2013, Bilthoven, the Netherlands

ECETOC was represented by Alan Poole (ECETOC)

#### Input to specific projects and reports

##### **ECHA Biocidal Products Committee**

Participation on behalf of ECETOC by M. Osterloh-Quiroz, Dow

##### **Endocrine Disrupter Expert Advisory Group to the EU Commission (ED EAG)**

Participation on behalf of ECETOC by Remi Bars (Bayer) and James Wheeler (Syngenta)

##### **ECHA Risk Assessment Committee (RAC)**

Participation as an observer on behalf of ECETOC by Alan Poole / Christa Hennes

##### **ECHA Member State Committee (MSC)**

Participation as an observer on behalf of ECETOC by Alan Poole / Christa Hennes

##### **ECHA Partner Experts Groups (PEGs)**

20 industry experts of 12 member companies registered through ECETOC for participation in PEGs; one ECETOC representative per PEG can be nominated. Currently, 5 industry experts of 4 member companies in 7 PEGs. (co-ordinator: C. Hennes)

## Science Programme • External representation • Input to specific projects and reports

### **ECHA PBT Expert Group**

Participation on behalf of ECETOC by Sylvia Jacobi (Albemarle)

### **ECHA Nanomaterials Working Group**

Participation on behalf of ECETOC by Karin Wiench (BASF)

### **ECVAM Stakeholder Forum (ESTAF)**

Participation on behalf of ECETOC by Remi Bars (Bayer)

### **OECD Working Party on Manufactured Nanomaterials**

ECETOC was represented (via BIAC) by Hans-Jürgen Wiegand (Evonik)

### **WHO/IPCS Chemical Risk Assessment Network**

Participation on behalf of ECETOC by Ben van Ravenzwaay (BASF)

### **6<sup>th</sup> Framework Programme Co-ordination Action Project "Norman"**

Participation in Advisory Board on behalf of ECETOC by Stuart Marshall (Unilever)

### **7<sup>th</sup> Framework Programme Co-ordination Action Project "EUROECOTOX"**

The EUROECOTOX project EU-FP7 funding finished at the end of 2012 but the feasibility and strategic importance of continuing the EUROECOTOX network was discussed at the final project meeting in Brno (Czech Republic). It was decided that from December 2012 the network would be managed by Dr Malyka Galay Burgos of ECETOC, one of the EUROECOTOX partners, since ECETOC has a proven track record in supporting the use of alternatives to animals for environmental assessments.

### **ILSI Europe Environment and Health Task Force**

Participation on behalf of ECETOC by Malyka Galay Burgos (ECETOC)

### **Klimisch Update for Environmental Risk Assessment**

With input from scientists in the ECETOC membership, the ring test has been evaluated and commented. The outcome of this exercise was presented at a special workshop at SETAC Glasgow 2013 and will be published soon. Several publications, including a peer reviewed paper, a book and several reports will be available in the near future. For more information contact Malyka Galay Burgos at ECETOC.

### **STFC / NERC Bioinformatics and Environmental 'Omics Network**

The overarching objective of the network is to build bridges between scientific communities in bioinformatics and environmental 'omics. The network will be co-aligned with the establishment of the new UK National Environmental Research Council (NERC) Environmental 'Omics Synthesis Centre (EOS), which has the remit of exploring emerging areas of bioinformatics and environmental 'omics and their application to environmental problems. ECETOC is represented by Malyka Galay Burgos.

## Science Programme

### Science awards

With the objective of recognising talented young scientists, ECETOC has been active in the provision of an annual Science Award to outstanding works of science since 2003. The 1st Science Award was accorded on the occasion of its ECETOC's 25th Anniversary to recognise the achievements of three promising European investigators in the fields of science relevant to its mission of supporting the safe manufacturing and use of chemicals, pharmaceuticals and biomaterials through good science. Since then, the format of the Award may have varied but the objectives have remained the same. In 2013 ECETOC sponsored the following awards for young scientists and is proud to announce this year's winners:



### Environmental science related award

The ECETOC Best Platform Award honours individual prominent performance in scientific work of an MSc student or a scientist within 3 year from MSc graduation, or a PhD student. The award winner is invited to the next Annual Meeting.

This year's Best Platform Award has been awarded to Julita Stadnicka-Michalak, Eawag, Switzerland, for her talk entitled: "Predicting toxicity to fish based on in vitro data".

[Download Abstract PDF here](#)

Event website: <http://glasgow.setac.eu>



## Science Programme • Science Awards

### Human health science related award

This is a Best Poster Award for toxicological research into mechanisms and risk assessment, selected by a panel in which ECETOC participates. The winner receives a monetary prize and a free invitation to the following year's EUROTOX meeting.



This year's Young Scientist Award on human health sciences, presented at the EUROTOX annual meeting in Interlaken, Switzerland, has been awarded to Olesja Bondarenko of the Estonian National Institute of Chemical Physics and Biophysics for her poster presentation on 'Biological effects of nanoparticles of silver, gold, TiO<sub>2</sub> and nanoporous silica to selected invertebrate species and bacteria: FP7 project NanoValid.'

[Download PDF here](#)

Event website: <http://www.eurotox2013.com>

## ECETOC CONTRIBUTION TO CEFIC LONG-RANGE RESEARCH INITIATIVE



*Since 1996, 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 and ambitious, but also realistic and coherent. LRI invests in long-term research and delivers transparent, quality-assured scientific data, open to the broad public.*

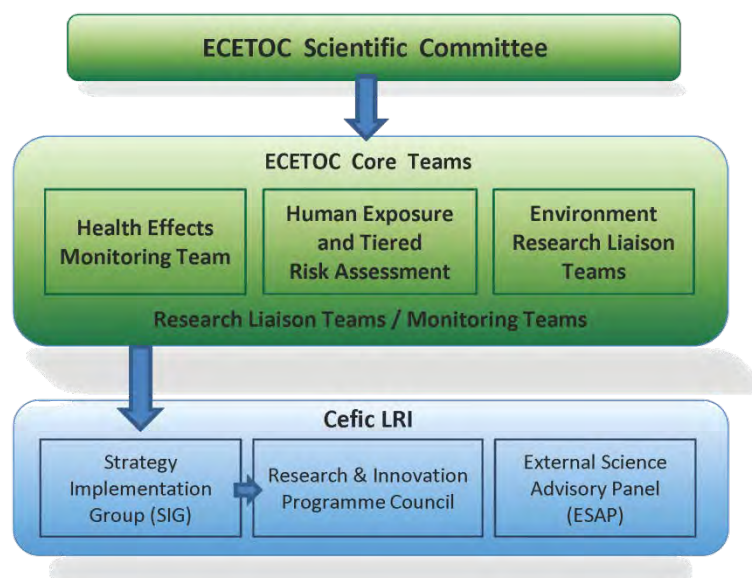
The current research areas of the LRI are addressing key public concerns:

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

## Long-range research initiative

ECETOC has been the scientific partner to Cefic LRI from the earliest stage of the process. ECETOC provides scientific support into the LRI, and input into the Research Programme. Within the LRI, ECETOC has the responsibility of maintaining three 'core teams' consisting of industry scientists, who manage the scientific evaluation of applications for funding, recommend the best research proposals and monitor the progress of selected LRI projects. In particular they are responsible for the:

- Development of topics for research to be considered by the LRI Strategy Implementation Group (SIG). (A core team may organise a workshop with academic, government and industry scientists for this purpose.)
- Drafting of 'requests for proposals' (RfPs) based on ideas submitted by Cefic and ECETOC stakeholders in the LRI process.
- Setting up selection teams of industry and external experts to choose the best research proposals in response to published RfPs and making recommendations to LRI SIG concerning the funding of the proposals.
- Establishment of scientific liaison with the selected institutions and monitoring the scientific quality and progress of the projects.



*Structure of ECETOC support for Cefic LRI*

## Long-range research initiative

### Health Effects Monitoring Team (HEMT)

The current research portfolio under the health effects programme, monitored by the HEMT, looks as follows (arranged by strategic theme of the LRI programme):

#### Integrated testing strategies

**B6:** A toxicogenomic approach to enhance the specificity and predictive value of the murine local lymph node assay

Principal investigator: Dr. Darrell Boverhof, Dow, Midland, MI, USA

#### Acceptance of new technologies and products

**N1:** Tiered approach to testing and assessment of nanomaterial safety to human health

Principal investigator: Dr. Otto Creutzenberg, Fraunhofer Institute of Toxicology and Experimental Medicine, Hannover, Germany

**N3:** Towards standardized testing guidelines (reproductive toxicity) relevant to nanomaterials

Principal investigator: Dr. J.J.M (Han) Van de Sandt, TNO, AJ Zeist, Netherlands

**AIMT2:** Mechanism-based characterisation of systemic toxicity for RepDose database substances employing *in vitro* toxicogenomics

Principal investigator: Dr. Rob H Stierum, TNO, AJ Zeist, Netherlands

**AIMT3:** Data-integration for endpoints, cheminformatics and omics

Principal investigator: Dr. Joost van Delft, Maastricht University, Netherlands

#### Impact of complex environments on health

**EMSG49:** Reprogramming of DNA methylation during mammalian development and environmental impact of endocrine disruptors

Principal investigator: Dr. Webber Michael, Institute of Molecular Genetics, Montpellier, France

**EMSG56:** Combined low-dose exposures to anti-androgenic substances

Principal investigator: Dr. Steffen Schneider, BASF, Ludwigshafen, Germany

**B10:** Animal and human NOAELs: cross-species comparison, inference and synthesis

Principal investigator: Dr. Lesley Rushton, Imperial College London, UK

**EMSG57:** Endocrine disruptors and obesity, diabetes and heart disease: State of the science and biological plausibility

Principal investigator: Dr. Judy LaKind, LaKind Associates, Catonsville, MD, USA

## Long-range research initiative

# Human Exposure and Tiered Risk Assessment Monitoring Team (HETRA)

The HETRA project monitors were satisfied with progress made during the reporting year. A list of all ongoing HETRA project activities in 2013 is given below, conveniently grouped into four traditional areas of exposure/risk assessment science.

## Better characterisation of actual exposures

### B11: Integrated external and internal exposure modelling platform

Principal investigator: Assoc. Prof. Dimosthenis Sarigiannis, Centre for Research and Technology Hellas, Thessaloniki, Greece

### B13: Development of a mechanistic *in silico* multi-scale framework to assess dermal absorption of chemicals

Principal investigator: Prof. Gerald Kasting – University of Cincinnati, OH, USA

### B15: Developing a robust method of allocating efficiency measures to regulatory instruments in the chemicals industry

Principal investigator: L Levy – Cranfield University, UK

## Tiered approaches to risk assessment

### B8: Improvement of the TTC concept for inhalation exposure and derivation of thresholds with the database Repdose (final report in 2013)

Principal investigator: Dr. Sylvia Escher, Fraunhofer ITEM, Hanover, Germany

## Nature of determinants of human exposure

### B7: Determining the nature of chemical substance additively from household consumer products

Principal investigator: Dr. Natalie von Götz, ETH, Safety & Environmental Technology Group, Zürich, Switzerland

### B9: Characterising the nature of dermal exposure from consumer products and articles

Principal investigator: Ir. Rudi Torfs, VITO (Flemish Institute for Technological Research), Mol, Belgium

### B12: Assessing the relevance of the dust contribution to substances from consumer products and articles \*

Principal investigator: Dr. Natalie von Götz, ETH, Safety & Environmental Technology Group, Zürich, Switzerland

## Role of biomarkers

### HBM4: Understanding inter- and intra-individual variability in HBM spot samples

Principal investigator: Dr. Ir. Roel Smolders, VITO, Mol, Belgium

## Long-range research initiative

### Environment Research Liaison Teams (ERLT)

5 new ERLT projects secured funding and were initiated in 2013 with the support of the research liaison teams (below marked with \*). The current research projects under the ERLT look as follows (arranged by strategic theme of the LRI programme):

#### Databases, Modelling & Validation

##### EEM 9.3: Linking IUCLID & AMBIT \*

Principal investigator: Nina Jeliaskova Institute of Parallel Processing, Bulgarian Academy of Sciences, Sofia, Bulgaria

#### Integrated testing strategies

**ECO 8.3:** Fish cell line & embryo assays: follow up to the CellSens ECO8/8.2 project (completed). A Round-Robin test of the RTgill-W1 cell line assay has now been established

Principal investigator: Prof. Kristin Schirmer, Eawag, Switzerland

**ECO 9:** Investigating the environmental relevance of laboratory bioconcentration test

Principal investigator: Dr. Heather A. Leslie, VU University, Netherlands

**ECO 11:** Influence of microbial biomass and diversity on biotransformation

Principal investigator: Dr. Russell Davenport, University of Newcastle, UK

**ECO 13:** Applying and verifying PBT/POP models through comprehensive screening of chemicals (completed)

Principal investigator: Prof. Michael McLachlan, Stockholm University, Sweden

**ECO 17:** Evaluation of test methods for measuring toxicity to sediment organisms

Principal investigator: Prof. Albert Koelmans, Wageningen University, Netherlands

**ECO 18:** Identifying limitations of the OCED water-sediment test (OECD 308) and developing suitable alternatives to assess persistence

Principal investigator: Dr Kathrin Fenner, EAWAG, Department of Environmental Chemistry, Switzerland

**ECO 19:** Towards more ecologically realistic assessment of chemicals in the environment

Principal investigator: Dr. Frederik De Laender, Ghent University, Belgium

**ECO 20:** Development of an alternative testing strategy for the fish early life-stage (FELS) test (OECD 210)

Principal investigator: Prof. Dr. Dries Knapen, University of Antwerp, Belgium

**ECO 21:** Mechanistic Bioaccumulation Model(s) for Ionogenic Organic Substances in Fish

Principal investigator: Dr. Jon Arnot, ARC Arnot Research & Consulting Inc, Canada



## Long-range research initiative • Environment Research Liaison Teams (ERLT)

**ECO 22:** Advancing the use of passive sampling in risk assessment and management of contaminated sediments: an inter-laboratory comparison study on measurements of freely dissolved (bioavailable) concentrations using different passive sampling formats. \*

Principal investigator: Michiel Jonker, University of Utrecht, the Netherlands

**ECO 23:** Time-Integrative Passive sampling combined with Toxicity Profiling (TIPTOP): an effect-based strategy for cost-effective chemical water quality assessment \*

Principal investigator: Timo Hamers, IVM, VU University, Amsterdam, The Netherlands

**ECO 24:** Computer based prediction of the formation of Non-Extractable Residues (NER) of xenobiotics and their metabolites in soils and sediments with regard to their environmental hazard \*

Principal investigator: Gerrit Schüürmann, Helmholtz Centre for Environmental Research (UFZ), Leipzig, Germany

**ECO 25:** Development of Soup Tests for the Risk assessment of NER in Soil \*

Principal investigator: Joop Harmsen, Alterra Wageningen UR, The Netherlands

## Acceptance of new technologies and products

**ECO 14b:** Development and validation of an abbreviated *in vivo* fish bioconcentration test

Principal investigator: Dr. Duane Huggett, University of North Texas, USA

**ECO 15:** Rapid estimation of TMF using laboratory, field and computer modelling methods in aquatic organisms

Principal investigator: Prof. Michael McLachlan, Stockholm University, Sweden

**ECO 16:** Critical body residue validation for aquatic organisms exposed to chemicals causing toxicity by baseline narcosis

Principal investigator: Dr. Joop Hermens, University of Utrecht, Netherlands

**N2:** Assessment of nanoparticle specific effects in environmental toxicity testing (Complete but now leading to a Workshop)

Principal investigator: Dr. Alistair Boxall, University of York, UK

## Impact of complex environments on health

**ECO 6.2a:** Establishing relationships of biotransformation across organisms (completed)

Principal investigator: Dr. Alistair Boxall, University of York, UK

**EMSG 55:** Critical evaluation of individual and combined natural and synthetic endocrine active compounds in fish: an *in vitro* and *in vivo* approach

Principal investigator: Prof. Tom Hutchinson, CEFAS, UK

# MEMBERS OF THE SCIENTIFIC COMMITTEE

The Scientific Committee is responsible for the definition, management and peer review of the ECETOC work programme. Appointed by the Board, the members are selected on the basis of their scientific expertise. During 2013, the Scientific Committee consisted of the following members:

Ben van Ravenzwaay <sup>a</sup> (Chairman)	BASF
Remi Bars	Bayer CropScience
Peter Boogaard <sup>b</sup>	Shell
Andreas Flückiger	F. Hoffmann-La Roche
Helmut Greim	Technical University Munich
René Hunziker <sup>c</sup>	Dow Europe
Fraser Lewis <sup>a</sup>	Syngenta
Guiseppe Malinverno	Solvay
Lorraine Maltby	University of Sheffield
Stuart Marshall	Unilever
Marie-Louise Meisters	DuPont
Chris Money	ExxonMobil, but at time of publishing, Cynara Consulting Ltd.
Mark Pemberton	Systox Limited (Formerly of Lucite)
Carlos Rodriguez	Procter & Gamble
Leslie Rushton	Imperial College London
Dan Salvito	RIFM on behalf of IFF
Jason Snape	AstraZeneca
Gerard Swaen <sup>d</sup>	Dow Chemical
Johannes Tolls	Henkel
Saskia van der Vies	VU University Medical Center
Kees van Leeuwen	KWR Watercycle Research Institute
Hans-Jürgen Wiegand	Evonik Industries

<sup>a</sup> In June 2013, Fraser Lewis stepped down as Chairman due to increased responsibilities in his job. At the June AGM, Ben van Ravenzwaay was unanimously voted in as the new SC Chairman.

<sup>b</sup> In February 2013, SC members welcomed the nomination of Peter Boogaard, Shell, to the Scientific Committee. The Board subsequently approved the nomination.

<sup>c</sup> René Hunziker joined the SC towards the end of 2013

<sup>d</sup> Gerard Swaen resigned from the Scientific Committee due to a career change.

# MEMBERS OF THE SECRETARIAT

The ECETOC Secretariat is responsible for the co-ordination and management of the scientific work programme, ensuring that the tasks assigned by the Scientific Committee are accomplished in a timely fashion. ECETOC's continued success relies greatly on its Secretariat. This team of dedicated professionals supports the scientists engaged in the work of the ECETOC programme in meeting the objectives set by the Scientific Committee.

During 2013, the Secretariat comprised the following members:

Alan Poole	Secretary General
Christa Hennes <sup>a</sup>	Health Sciences Manager
Henk Vrijhof <sup>b</sup>	Chemicals Programme Manager
Malyka Galay-Burgos	Environmental Sciences Manager
Geneviève Gérits	Office Manager
Ian Cummings	Communications, Web & Media Manager
Christine Yannakas	Administrative Assistant
Sonia Pulinckx	Administrative Assistant

<sup>a</sup> Deceased. Over the years, many of you will have come to know our Human Health Sciences Manager Christa Hennes as a colleague and as a friend. Sadly, Christa passed away in December 2013 after a long term illness. Christa joined ECETOC as Health Sciences Manager in October 2002. Christa was a wonderful, kind and generous person to work with and will be remembered for her professionalism, dedication and good-natured character.

<sup>b</sup> Retired end January 2014. A senior staff member and Chemicals Programme Manager, Henk joined ECETOC in 1988 as an environmental scientist having worked in national and international government. We wish him well in his retirement.



# FINANCE

## INCOME ACTUAL 2013 IN EURO

### Subscription

36 Full Members	1,242,000
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7 Associate Members	70,000
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Total Subscription Income	1,312,000
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Bank Interest	5,028
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Investment income	1,567
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Project-related	207,353
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<b>Total</b>	<b>1,525,948</b>
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## EXPENDITURE ACTUAL 2013 IN EURO

Salaries (and related expenses)	951,522
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Office Running Expenses	182,640
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Travel Expenses on Missions	9,935
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Meetings and Consultants	311,045
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Professional Services	35,898
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Bank Charges	4,267
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Capital Expenditure	5,743
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Publications	6,460
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Miscellaneous	9,027
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Website	10,000
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<b>Total</b>	<b>1,526,537</b>
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#### **BALANCE SHEET AND RESERVES ACTUAL 2013 IN EURO**

##### Balance Sheet

Income	1,525,948
Expenditure	1,526,537
Operating Margin	-589

##### Reserves\*

Opening	1,991,454
Operating Margin	-589

##### **Closing Reserves**

**1,990,865**

\*Estimated Reserve Required 400,000



# ABBREVIATIONS

<b>(Q)SAR</b> (Quantitative) structure-activity relationships	<b>ED EAG</b> Endocrine Disrupter Expert Advisory Group to the EU Commission	<b>HESI</b> Health and Environmental Sciences Institute
<b>AOP</b> Adverse outcome pathways	<b>EDTA</b> Ethylenediaminetetraacetic acid	<b>HETRA</b> Human exposure and tiered risk assessment
<b>ATM</b> Annual technical meeting	<b>EEMS</b> European Environmental Mutagen Society	<b>ICCA</b> International Council of Chemical Associations
<b>BIAC</b> Business and Industry Advisory Committee to the OECD	<b>EFSA</b> European Food Safety Authority	<b>ICEM</b> International Conference on Environmental Mutagens
<b>C&amp;L</b> Classification and labelling	<b>EOS</b> NERC Environmental 'Omics Synthesis Centre	<b>ILSI</b> International Life Sciences Institute
<b>Cefic</b> European Chemical Industry Council	<b>EPA</b> (US) Environmental Protection Agency	<b>IPCS</b> International Programme on Chemical Safety
<b>Chesar</b> ECHAs CHEMical Safety Assessment and Reporting tool	<b>ERA</b> Environmental risk assessment	<b>JACC</b> Joint assessment of commodity chemicals
<b>CSA</b> Chemicals Safety Assessment	<b>ERLT</b> Environment research liaison teams	<b>JRC</b> Joint Research Centre
<b>DNA</b> Deoxyribonucleic acid	<b>ESTAF</b> ECVAM Stakeholder Forum	<b>KOW</b> Octanol-Water Partition Coefficient
<b>DNEL</b> Derived no-effect level	<b>EU</b> European Union	<b>LOEL</b> Lowest observed effect level
<b>ECETOC</b> European Centre for Ecotoxicology and Toxicology of Chemicals	<b>EUROECOTOX</b> European Network for Alternative Testing Strategies in Ecotoxicology	<b>LRI</b> Cefic's Long-range Research Initiative
<b>ECHA</b> European Chemicals Agency	<b>EUROTOX</b> Association of European Toxicologists and European Societies of Toxicology	<b>MoA</b> Mode of action
<b>ECPA</b> European Crop Protection Association	<b>GHS</b> Globally harmonised system of classification	<b>MSC</b> (ECHA) Member State Committee
<b>ECVAM</b> European Centre for the Validation of Alternative Methods	<b>HEMT</b> Health effects monitoring team	<b>NER</b> Non-extractable residues

**NOAEL**

No observed adverse effect level

**NOEL**

No observed effect level

**NORMAN**

Network of reference laboratories, research centres and related organisations for monitoring of emerging environmental substances

**OECD**

Organisation for Economic Co-operation and Development

**OEL**

Occupational exposure limit

**PBT**

Persistent, bioaccumulative toxic

**PEG**

(ECHA) Partner Expert Group

**POP**

Persistent organic pollutant

**RAC**

(ECHA) Risk Assessment Committee

**REACH**

EU regulatory framework for the registration, evaluation and authorisation of chemicals

**RfP**

Request for proposal

**RIP-oN 2**

REACH Implementation Project on Nanomaterials

**RNA**

Ribonucleic acid

**SC**

Scientific Committee

**SETAC**

Society of Environmental Toxicology and Chemistry

**SIG**

LRI strategy implementation group

**SOT**

US Society of Toxicology

**STFC**

Science and Technology Facilities Council, UK

**TGD**

Technical Guidance Documents

**TR**

ECETOC technical report

**TRA**

Targeted risk assessment

**vPvB**

Very persistent and very bioaccumulative

**WHO**

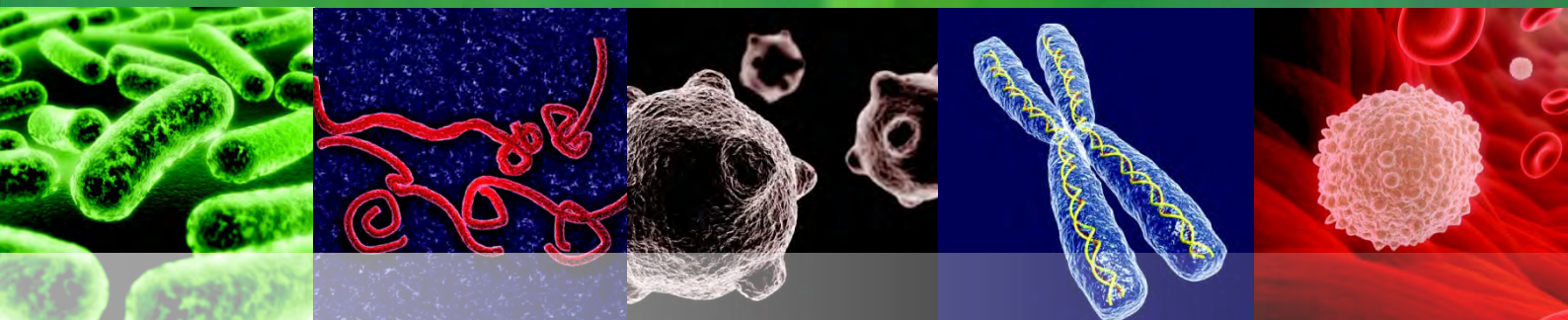
World Health Organisation

**WR**

ECETOC workshop report







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***Enabling chemical benefits while protecting human health and the environment***

Developing and promoting quality science, ECETOC is the leading European scientific forum for the ecotoxicology and toxicology of chemicals, biomaterials and pharmaceuticals. ECETOC is an independent organisation, highly-respected in the regulatory and scientific communities. Founded in 1978 and based in Brussels, ECETOC's work focuses on the health assessment and environmental safety of substances.

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