



International Akademie Fresenius Conference

Assessment of Thyroid Disrupting Chemicals

+++ ONLINE CONFERENCE +++

1 and 2 February 2023

Highlights

- EFSA on the identification of thyroid disruptive pesticide active substances according to the EFSA/ECHA ED guidance
- OECD work on the development of standardised methods for thyroid disruption testing
- Toxicological assessment of thyroid toxicants in Great Britain
- Thyroid related developmental neurotoxicity effects (DNT): Strategies for identification, new assays, AOPs and human epidemiological evidence
- Update on activities within EU projects: EURION Cluster, ENDpoiNTs and ATHENA
- Advancing translational applications of human organotypic thyroid assays
- Biomarkers for detecting thyroid disrupting chemicals
- New endpoints for thyroid hormone system disruptor testing with fish
- Lessons learnt from XETA: combining in vitro & in vivo methods for comprehensive assessment of thyroid modes of action



The Experts

Pavel Balazki esqLABS | **Lisa Baumann** Vrije Universiteit Amsterdam | **Manon Beekhuijzen** Charles River Laboratories | **Susy Brescia** Health and Safety Executive, Chemicals Regulation Division (HSE/CRD) | **Chad Deisenroth** U.S. Environmental Protection Agency (EPA) | **Ellen Fritsche** IUF – Leibniz Research Institute for Environmental Medicine | **Anne Gourmelon** Organisation for Economic Co-operation and Development (OECD) | **Ellen Hessel** Dutch National Institute for Public Health and the Environment (RIVM) | **Tim Korevaar** Erasmus University Medical Center | **Andreas Kortenkamp** Brunel University London | **Gregory Lemkine** Laboratoire Watchfrog | **Stephanie Melching-Kollmuss** BASF | **Katherine O’Shaughnessy** U.S. Environmental Protection Agency (EPA) | **Joëlle Rüegg** Uppsala University | **Andrea Terron** European Food Safety Authority (EFSA) | **Martin Wilks** Swiss Centre for Applied Human Toxicology | **Fang Zhang** Syngenta

Morning Session 09:00 – 12:00 CET

Welcoming speech by the organisers and the Chairs

Stephanie Melching-Kollmuss, BASF, Germany
Martin Wilks, Swiss Centre for Applied Human Toxicology, Switzerland

The presentation slots include sufficient time for questions and answers.

Regulatory Issues

Identification of thyroid disruptive pesticide active substances according to the ED criteria as implemented by the EFSA/ECHA guidance

- The EFSA ED database on pesticide active substances, focus on T modality
- The complexity and the limitations of the assessment based on the current dataset for pesticide active substances

Andrea Terron, European Food Safety Authority (EFSA), Italy

Toxicological assessment of thyroid toxicants in Great Britain

- The approach taken by GB in the toxicological evaluation of potential thyroid toxicity of pesticides and biocides
- Possible divergence from the EU approach with some real case studies
- Developments of new test methods for the identification of thyroid toxicants

Susy Brescia, Health and Safety Executive, Chemicals Regulation Division (HSE/CRD), United Kingdom

Short break

OECD work on the development of standardised methods for thyroid disruption testing

- Harvesting from the EU-NETVAL
- Current activities of the expert group
- Challenges associated with batteries on in vitro assays

Anne Gourmelon, Organisation for Economic Co-operation and Development (OECD), France

Proposal for a thyroid testing and assessment scheme – update from the ECETOC task force

- Weight of evidence analysis of adverse in vivo thyroid effects and in silico/in vitro thyroid activity
- Mode of action and human relevance assessment of thyroid (hormone) effects
- Higher tier animal testing to investigate neurodevelopmental toxicity
- Thresholds of offspring thyroid hormone effects for induction of neurodevelopmental effects
- Quantitative Adverse Outcome Pathways

Stephanie Melching-Kollmuss, BASF, Germany

Afternoon Session 13:00 – 16:00 CET

Human-relevant Developmental Neurotoxicity

Human epidemiological evidence for thyroid-related neurodevelopmental effects from chemical exposure

- Mechanisms related to thyroid-dependent brain development and how these could be impacted by thyroid disruptors
- (Lack of) available studies on the mechanistic pathways of disruptors
- Thyroid hormone availability and fetal brain development

Tim Korevaar, Erasmus University Medical Center, The Netherlands

Thyroid related developmental neurotoxicity effects

- Studying health effects of thyroid-mediated neurodevelopment in a multidisciplinary team
- Starting to develop a virtual human for thyroid-brain-mediated neurotoxicity by mapping the human biology
- Including human scenario's such as age and sex

Ellen Hessel, National Institute for Public Health and the Environment (RIVM), The Netherlands

Short break

Evaluation of EOGRTS studies with focus on the thyroid and DNT endpoints

- Introduction to EOGRTS incl. details of study design
- Evaluation of 32 EOGRTS to investigate a link between the thyroid and DNT results
- Recent request by ECHA to include Learning & Memory assessments in the studies in which the DNT was triggered due to an effect on the thyroid

Manon Beekhuijzen, Charles River Laboratories, The Netherlands

Relevance of biomarkers of effect in the detection of thyroid-disrupting chemicals

- Mechanistic in vivo studies to identify novel biomarkers of developmental neurotoxicity
- Rapid and cost-effective assays
- Biomarkers of effect: shortening in vivo testing paradigms and reducing the number of animals required

Katherine O'Shaughnessy, U.S. Environmental Protection Agency (EPA), United States of America

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Morning Session 09:00 – 12:00 CET

Activities within EU Projects

Update from the ATHENA project on assays for the identification of thyroid hormone axis-disrupting chemicals

- Gaps in the current regime for testing and regulating thyroid hormone system disruptors
- New approaches and test methods in ATHENA
- Brief overview of the EURION cluster

Andreas Kortenkamp, Brunel University London, United Kingdom

The ENDpoiNTs project: identifying endocrine disruption-induced developmental neurotoxicity – thyroid disruption and beyond

- Developing novel methods and strategies to identify chemicals that induce developmental neurotoxicity (DNT) via an endocrine mode of action
- New assays for thyroid-dependent DNT key events/processes
- Novel endocrine pathways involved in DNT key events and the testing of their response to known endocrine disruptors and possible cross-talk with thyroid hormone signaling

Joëlle Rüegg, Uppsala University, Sweden

Short break

Testing for non-target Organisms

New endpoints for thyroid hormone system disruptor testing with fish

- Lack of thyroid-sensitive endpoints in fish as a result of the gap in the test battery for endocrine disruptor testing
- Testing the implementation of new endpoints into OECD TGs 210, 234 and 236
- Promising new endpoints: swim bladder inflation and eye development, combined with analyses of TH levels and thyroid follicle morphology

Lisa Baumann, Vrije Universiteit Amsterdam, The Netherlands

Lessons learnt from XETA: combining in vitro & in vivo methods for comprehensive assessment of thyroid modes of action

- Identifying thyroid-active chemicals through OECD guidelines and ECHA/EFSA guidance
- Mechanistic approach for comprehensive assessment of endocrine activity
- Deciphering modes of action: towards comparative physiology

Gregory Lemkine, Laboratoire Watchfrog, France

Afternoon Session 13:00 – 16:00 CET

New Approach Methodologies

NPC assays and their impact on the revelation of thyroid hormone sensitive targets for assessing hormonal disruption

- Organ- and species-specific aspects of thyroid hormone receptor function with the focus on the developing brain
- Assay for assessment of thyroid hormone disruption using human neural progenitor cells and a case study using this assay
- Presentation of an adverse outcome pathway network

Ellen Fritsche, IUF – Leibniz Research Institute for Environmental Medicine, Germany

Thyroid Hormones Quantitative Systems Toxicology Platform (TH QST Platform) in rat and human for predictions of TH concentrations in the fetal (and pup) blood and brain

Pavel Balazki, esqLABS, Germany

Short break

Design of in vitro hepatocyte thyroid hormone glucuronidation assays for regulatory decision making

- Study design of the comparative hepatocyte assay
- Data evaluation and interpretation
- Incorporating data into existing data using weight of evidence and assessing human relevance

Fang Zhang, Syngenta, United Kingdom

Advancing translational applications of human organotypic thyroid assays

- Development of a human thyroid organotypic culture model to address data gaps in screening and prioritisation of thyroid disrupting chemicals
- Establishing confidence with an inter-laboratory pre-validation study of the human thyroid microtissue assay
- Orthogonal screening of prioritised chemicals in human thyroid microtissues for functional and mechanistic relevance

Chad Deisenroth, U.S. Environmental Protection Agency (EPA), United States of America

How will this online conference work?

Our online conference will be live – with interactive participation – and will be held in the English language. Prior to the conference, we will provide you with your login details, which will allow you to participate and ask questions from your preferred location. All you need is a stable internet connection and an audio hardware system – and away you go!

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Participation Fee:

€ 995.00 plus VAT

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Do you have any questions?



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The Organisers

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Who should attend this conference?

Professionals working in the fields of:

- ✓ Toxicology and ecotoxicology
- ✓ Chemical risk assessment
- ✓ Regulatory affairs
- ✓ Research and development
- ✓ Technical counselling

Sectors that should take part:

- ✓ Chemical, biocide, agrochemical, cosmetic industries
- ✓ Competent authorities, regulatory bodies and research institutes
- ✓ Consultancies
- ✓ Testing laboratories and contract research organisations (CROs)

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