

JOINT EVENT

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Towards a sustainable chemical future

Since the start of the industrial revolution, society has become increasingly reliant on the use of chemicals, including pesticides, pharmaceuticals, plasticizers and personal care products, to name a few. In 2016, European chemical sales alone were valued at 507 billion Euros, with 80,000 chemicals reported to be in common use worldwide. Alongside the many benefits of chemicals to society, concerns about the impacts of certain chemicals to both human and wildlife health, including the so-called 'endocrine disrupting chemicals' is a topic of increasing concern. Since the term 'endocrine disruptor' was coined in 1991, extensive research into the effects of various chemicals, and chemical mixtures, on human and wildlife health has been conducted globally. More than 1,300 studies have suggested connections between endocrine-disrupting chemical (EDC) exposure and serious health conditions such as infertility, diabetes, obesity, hormone-related cancers and neurological disorders in humans. The range of endocrine targets captured by regulatory tests is expanding rapidly, and new mechanistic insights, such as epigenetic mechanisms of chemical-induced disease, continue to challenge the regulatory frameworks designed to protect society and the environment. Difficulties still exist in balancing the trade-offs between the benefits of chemicals to society at point of use with the burden of proof needed to demonstrate the adverse consequences of the same chemicals once they are allowed to disperse in the environment. When dealing with such complexity, is it possible to achieve a vision of a sustainable society where chemicals are managed carefully throughout their lifecycle and where people benefit from their use and thrive within nature's limits? What strategies and insights can sustainability science offer to help society balance the Tox-Eco system?

Recent Publications

1. Kaur S, Jobling S, Jones CS, Noble LR, Routledge EJ, Lockyer AE (2015) The Nuclear Receptors of *Biomphalaria glabrata* and *Lottia gigantea*: Implications for Developing New Model Organisms. *PLOS One* 10(4): UNSP e0121259.
2. Bannister R, Beresford N, Granger DW, Pounds NA, Rand-Weaver M, White R, Jobling S, Routledge EJ (2013) No substantial changes in estrogen receptor and estrogen-related receptor orthologue gene transcription in *Marisa cornuarietis* exposed to estrogenic chemicals. *Aquatic Toxicology* 140: 19-26.
3. Routledge EJ, White R, Parker MG, Sumpter JP (2000) Differential effects of xenoestrogens on coactivator recruitment by estrogen receptor (ER) alpha and ER beta. *Journal of Biological Chemistry* 275(46): 35986-35993.
4. Routledge EJ, Parker J, Odum J, Ashby J, Sumpter JP (1998) Some alkyl hydroxy benzoate preservatives (parabens) are estrogenic. *Toxicology and Applied Pharmacology* 153(1): 12-19.
5. Routledge EJ & Sumpter JP (1996) Estrogenic activity of surfactants and some of their degradation products assessed using a recombinant yeast screen. *Environmental Toxicology and Chemistry* 15(3): 241-248.

Biography

Edwin John Routledge is an Environmental Scientist whose research is concerned with understanding the effects of environmental chemicals (particularly endocrine disruptors) on wildlife and human health. His research interests include the effects of endocrine-disrupting chemicals (EDCs) on wildlife and human health, the effects of EDCs on the environment, and the effects of EDCs on the human endocrine system. He has published over 100 papers on these topics and is a frequent speaker at international conferences. He is also a member of the International Union of Pure and Applied Chemistry (IUPAC) and the International Union of Environmental Chemists (IUEC). He is currently a Senior Lecturer in Environmental Toxicology and Chemistry at Brunel University London, UK.

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