

Adaptation to Chemical Perturbation in the HPG Axis: Implications for Assessment and Monitoring. Gerald T. Ankley, USEPA, ORD/NHEERL/MED, 6201 Congdon Blvd., Duluth, MN, 55804, USA.

Over the past 15 years chemicals that impact the vertebrate hypothalamic-pituitary-gonadal (HPG) axis have arguably received more attention relative to research and regulation than any other class of environmental contaminants. Testing and monitoring programs to identify and assess the effects of endocrine-active chemicals (EACs) are being implemented throughout the world. A unique aspect of these programs relative to past efforts in the arena of chemical regulation has been an emphasis as much on toxic mechanism of action as on possible adverse effects. This has resulted in the development and implementation of assay systems for EACs that are focused on molecular, biochemical and histological endpoints not traditionally used in human health or ecological assessments of toxic chemicals. While these types of mechanistic endpoints are of substantial utility in terms of understanding system perturbation, changes at lower biological levels of organization are not necessarily predictive of negative impacts at individual and, ultimately, population levels. Research coordinated through the US Environmental Protection Agency (USEPA) aquatic toxicology lab in Duluth, MN has focused on approaches to link EAC-induced alterations in mechanistic endpoints to higher-level responses meaningful to risk assessment and regulation. A major challenge in making these linkages has proven to be the highly dynamic, adaptive nature of HPG function in response to environmental stressors, including chemicals. This presentation will focus on understanding adaptation in the context of EAC assessment/monitoring using data from studies with model small fish species (zebrafish, fathead minnow) exposed to chemicals that impact different pathways within the HPG axis. *This presentation does not reflect USEPA policy.*