

The Endocrine System: Global Perspectives on Testing Methods and Evaluation of Endocrine Activity

Ellen Mihaich, Environmental and Regulatory Resources, USA
Catherine Holmes, BASF, USA

Abstract

In response to the concern that certain environmental chemicals could be interfering with the endocrine system of humans and wildlife, regulations have been promulgated in various regulatory bodies around the world to target the evaluation of these types of effects. The purpose of this short-course is to address key topics related to endocrine system evaluation and regulatory requirements around the world. The course will provide basic information on the vertebrate endocrine system, mechanisms of control, and adverse effects. The focus of the endocrine system presentation will be the estrogen, androgen, and thyroid systems. The requirements of the US EPA's Endocrine Disruptor Screening Program, as well as those for REACH and other regulatory initiatives around the world, including the development of definitions and criteria in the EU, will be reviewed. Specific screens and tests used in these programs will be discussed, including plans for the evolution of the US EPA program, such as EDSP21 and the development of adverse outcome pathways. Use of weight of evidence evaluations in interpreting the data will be covered. Finally, an interactive simulation will be staged where small groups of participants can engage in a transparent and quantitative weight of evidence evaluation of data.

Course Objectives

This is an update and extension of a previously taught course. As stated in the abstract our objectives are to review the vertebrate endocrine system and point out the conservative nature of primarily the estrogen, androgen and thyroid hormonal systems. After completion of the course, students should: 1) have a fundamental understanding of the endocrine system, 2) be able to describe the differences between endocrine regulation within and between Europe, the United States and Japan, 3) know the types of tests required and the objectives of each test 4) be able to apply a weight of evidence procedure to a test data set, and 5) understand the direction of future endocrine testing and regulation. The course will be updated with the latest activities in the endocrine arena throughout the world occurring at the time of the course.

Course level

Introductory