



Incorporating Stress as a Variable into Toxicological Testing: Advancing Our Understanding of Cumulative Impacts

W. Klaren

Wednesday, March 19, 2025

8:00 AM – 10:45 AM

1259

Workshop Session: Incorporating Stress as a Variable into Toxicological Testing: Advancing Our Understanding of Cumulative Impacts

Convention Center

Room W307A

Abstract:

With greater understanding of the complex interactions between different biological systems and the social, occupational, and chemical environment, there is increasing interest in understanding the potential differences in the adverse effects of chemicals. Consideration of differences in susceptibility to adverse effects from various exposures extends beyond that of genetic differences actively being investigated in various animal or *in vitro* models. One such environmental factor that comes into play is the influence of non-chemical stress on chemical-biological interactions. While considerations for stress to impact toxicity testing are well-recognized (e.g., animal handling), studies are largely not designed to examine the explicit role of additional stress to potentially impact susceptibility to adverse effects. As such, there is a need to understand how stress whether occupational, personal, or societal may impact the ultimate susceptibility of individuals in advanced risk assessments. This session will focus on several experimental approaches designed to explicitly incorporate stress as an experimental variable. Such approaches offer understanding into the interaction between the biology of stress and the impact on chemical toxicity (e.g., stress potentiating or mitigating toxic effects). First, results from a targeted scoping review will characterize the breadth of available experimental models that consider stress, as well as illustrate why stress is an important consideration in toxicological testing. The second talk will expand on the US Environmental Protection Agency's actions toward investigating stress and the prioritization of chemicals being considered in their assays. The remaining talks will each present unique experimental models designed to consider the impact that stress has on chemical response. In all, this session will highlight the importance of considering stress within some experimental models and present several approaches that attempt to address this research need.