

2019 SOT Conference  
Symposium: Assessing Acute Health Risk:  
Potential Application of Next Generation Toxicological Tools  
Monday March 11, 2019  
9:50AM-10:20AM

## **A Conceptual Model for Predicting How Acutely Toxic Exposure Levels Should Relate to Those Associated with Toxicity from Longer-Term Exposures, Suggesting Approaches to Using *in vitro* Data in Exposure-Duration Extrapolation.**

Human health risk assessments estimate the nature and probability of adverse health effects in humans who may be exposed to chemicals in the environment. Estimates of health risks resulting from chemical exposure are typically based on an assumption that either low-level, chronic (~year or more) or higher-level, acute (~day or less) exposures adequately span the range of all other potential scenarios. However, there are relatively few health effect toxicity values applicable to the general population for acute exposures as opposed to chronic chemical exposures. A primary reason is that a large number of chemicals have a paucity of short-term human and animal data on which to base acute toxicity values. *In vitro*, computational modeling, conceptual frameworks, and other higher-throughput measurements may help fill these gaps. These next-generation tools have been slowly integrated into chronic chemical hazard prioritization over the last decade, but the use of these tools to quantitatively derive reference values for acute exposure scenarios has not been widely discussed even though these studies are inherently acute in nature. This session will first explore how acute toxicity values are currently being derived and used to assess the potential for short-term risk. The session will continue to discuss both the challenges and the promises of using next-generation toxicological tools (specifically pharmacokinetic or pharmacodynamic modeling, adverse outcome pathway frameworks, and high-throughput testing strategies) to address data deficiencies associated with the derivation and proper application of acute health toxicity values.