Developing a Roadmap for Integrating Computational and In Vitro Approaches in Risk-Based Chemical Safety Decisions

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Multiple drivers shape the types of chemical assessments performed within many regulatory agencies including economic considerations, data availability, and the ultimate application of the assessment. The result is that chemical assessments are “fit-for-purpose” ranging from prioritization for further testing to full risk assessments. Layered on top of these diverse applications is the data poor environment that exists for chemical toxicity and exposure due the costly and resource intensive nature of traditional toxicological and exposure studies. New technologies and computational tools have shown promise for closing this knowledge gap. These approaches include automated read-across methods, high-throughput screening, adverse outcome pathways, high-throughput exposure modeling, and high-throughput toxicokinetic models. A new roadmap is needed to integrate and distill the diverse data streams into quantitative toxicity values and exposure estimates with associated estimates of uncertainty to support different decision contexts. This talk will focus on the types of new data being collected and the development of the roadmap with the goal of efficiently and cost-effectively applying the information to risk-based chemical safety decisions. *This abstract does not necessarily reflect U.S. EPA policy.*