

Updates to the Integrated Chemical Environment: Expanding Tools and Data to Support Toxicity Assessments

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The Integrated Chemical Environment (ICE) contains curated data, computational workflows, and other resources to support stakeholders of the National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM) in applying alternatives to animal use for chemical safety testing. Recent updates to ICE have expanded opportunities for user interaction with ICE data. Interactive visualizations allow users to explore *in vivo*, *in vitro*, and *in silico* data for a range of toxicity endpoints as well as new tools for the curated high throughput screening (cHTS) data and physiologically based pharmacokinetic modeling.

ICE data are described by a toxicological endpoint-based knowledge organization system (KOS) that links assays to toxicity endpoints, mechanistic targets, or modes of action, facilitating the selection of relevant data. In keeping with Findable, Accessible, Interoperable and Reusable (FAIR) data principles, ICE updates include metadata with downloads and harmonized terminologies to facilitate interoperability. Updates to the Search tool use the KOS to connect with external resources and internal ICE tools. Additional updates allow users to explore bioactivity of a chemical or mixture through interactive visualizations. From Search, users can now explore dose-response data in detail. The annotation of the cHTS data to the KOS helps guide assay selection so users can compare detailed bioactivity data for their chemicals. The In Vitro to In Vivo Extrapolation (IVIVE) tool allows users to predict equivalent *in vivo* exposures from *in vitro* bioactivity concentrations. The IVIVE tool now allows users to provide their own data, thereby expanding user control over chemical availability and physiochemical properties used in the tool. Additional customizations to the modeling have been added. New to ICE, the Forward Dosimetry tool builds off the IVIVE tool so users can calculate plasma concentrations from an exposure. This can be used to guide test concentration selection for *in vitro* testing. Features of all tools and example chemical evaluation use cases will be presented. ICE is funded in whole or in part with federal funds from the NIEHS, NIH under Contract No. HHSN273201500010C.