

## The Integrated Chemical Environment: Tools and Data to Support Toxicity Assessments

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Modern toxicity testing includes more than standard animal tests. A complex suite of approaches is needed to gain insight into biological interactions between test substance and target organism. These approaches include in vitro and ex vivo testing, complimented by in silico model predictions and computational tools to inform the decision process. Over the past two years, the Integrated Chemical Environment (ICE) has been the source for curated and toxicological testing-relevant data from the NTP Interagency Center for the Evaluation of Alternative Test Methods (NICEATM) and other stakeholders and partners. ICE is continuously evolving to support the growing data needs of method developers and risk assessors. Here we describe new ICE features, including updated data sets and changes to the data Integrator, as well as online computational tools targeted to toxicologists and risk assessors. A new in vitro to in vivo extrapolation tool has expanded functions to address multiple species and metabolism components in both single-compartment and three-compartment physiologically based pharmacokinetic models. A simple machine learning tool allows exploration of data relationships and model building. The chemical characterization and comparison tool helps users describe and investigate their chemical testing space. Integrator improvements simplify data selection and toggling between views, and new data sets have been added, including reproductive and developmental toxicity data. All datasets are now described by a toxicological endpoint-based ontology. The ontology links assays to relevant toxicities or modes-of-action, making it easier for users unfamiliar with the assays to select ICE data sets that may be most relevant to their queries. ICE was funded in whole or in part with federal funds from the NIEHS, NIH under Contract No. HHSN273201500010C.

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