

Good Decisions Require Good Data: Creating Curated and Structured Resources for Toxicology

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The world is more data-driven than ever, with real-time data streams used to optimize everything from music selection and GPS routes to watering and pesticide application in agriculture. Data are also used to evaluate existing or new test substances for possible harm and risk. Modern toxicity testing couples existing data with new assay results using computational methods and models to aid in decision making. This integration paradigm is used to characterize interactions between test substance and target organism to generate an effect prediction. Trustworthiness and appropriateness of data play a key role in impacting the reliability of the predictions. Less reliable data may be acceptable for prioritization or screening purposes, but when predictions are to be used as the basis of a regulatory decision, data reliability and appropriateness for the decision are critical. The NTP Interagency Center for the Evaluation of Alternative Test Methods (NICEATM) is establishing reliable curated datasets for test method developers and risk assessors. In this presentation we provide examples of how adding data structure through controlled vocabularies and expert groupings can make data accessible and guide appropriate use, particularly for users without in-depth knowledge of test systems. Additional examples highlight the importance of curation for data interpretation. Access to curated NICEATM data via the Integrated Chemical Environment is demonstrated in case studies. This work was funded in whole or in part with federal funds from the NIEHS, NIH under Contract No. HHSN273201500010C.