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INNOVATIVE RESEARCH FOR A SUSTAINABLE FUTURE

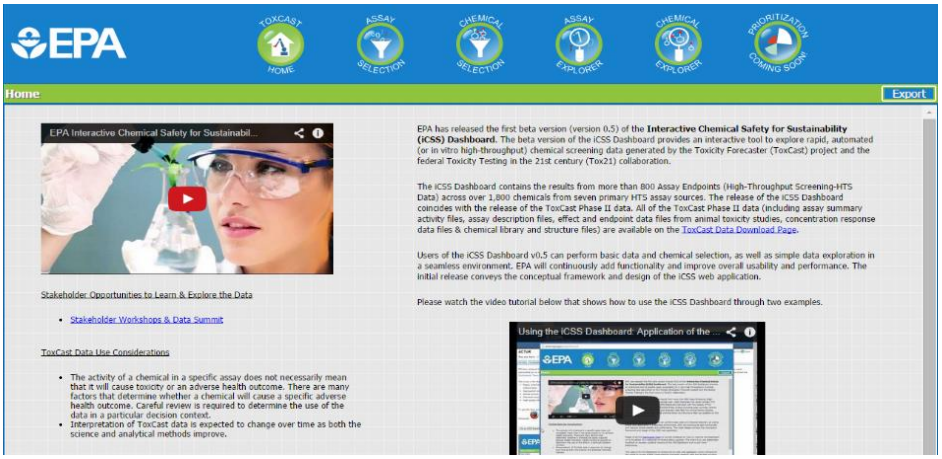
Interactive Chemical Safety for Sustainability (iCSS) Dashboard

Background

Tens of thousands of chemicals are currently in use, and hundreds more are introduced every year. Because current chemical testing is expensive and time consuming, only a small fraction of chemicals have been evaluated fully for potential human health effects.

Through its chemical safety research, the U.S. Environmental Protection Agency (EPA) is working to figure out how to change the current approach used to evaluate the safety of chemicals. These efforts have substantially increased the amount of available chemical safety data. To help translate this data so that it can be used to help inform chemical safety decisions, EPA develops online tools and engages stakeholders to request feedback.

The interactive **Chemical Safety for Sustainability (iCSS) Dashboard** is a web-based application that provides a portal to chemical data from high-throughput screening technologies. Currently, the iCSS Dashboard allows users to search and query rapid, automated (high-throughput) screening data on thousands of chemicals.



The beta version of the Dashboard provides an interactive tool to explore high-throughput chemical screening data generated by the Toxicity Forecaster (ToxCast).

The iCSS Dashboard contains the results from screening more 1,800 chemicals in 800 assays. The release of the Dashboard coincided with the release of new ToxCast data. The complete ToxCast dataset (including assay summary activity files, assay description files, effect and endpoint data files from animal toxicity studies, concentration response data files & chemical library and structure files) are available on the ToxCast Data Download Page*.

Users of the iCSS Dashboard v0.5 can perform basic data and chemical selection, as well as simple data exploration in a seamless environment. EPA will continuously add functionality and improve overall usability and performance of the iCSS Dashboard. The initial release conveys the conceptual framework and design of the iCSS web application.

Future of the iCSS Dashboard

Although the iCSS Dashboard is currently a beta version, work is ongoing to improve the dashboard and data by using stakeholder feedback. The current iCSS Dashboard only contains high-throughput data, but the goal is evolve the web application that can be used to interact with all publicly available EPA chemical safety data including:

- Rapid, automated (or in vitro high-throughput) chemical screening data generated by the EPA's Toxicity Forecaster

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(ToxCast) project and the federal Toxicity Testing in the 21st century (Tox21) collaboration.
- Aggregated public sources of chemical toxicity data (ACToR).
- Animal toxicity studies (ToxRefDB).
- Chemical exposure data and prediction models (ExpoCastDB).
- High quality chemical structures and annotations (DSSTox)

To complement ToxCast, the exposure forecasting (ExpoCast) effort is developing rapid, automated chemical exposure estimations for thousands of chemicals based on manufacture and use information. The goal is to use this data to help fill in the risk assessment framework by using ToxCast to inform the hazard identification and ExpoCast to inform the level of exposure.

Collaboration

EPA actively engages stakeholders to solicit feedback about how to improve ToxCast data. These stakeholder engagement activities include EPA hosted workshops, webinars, demonstrations, videos and trainings.

For more information:
ToxCast:
http://epa.gov/ncct/toxcast/

iCSS Dashboard:
http://actor.epa.gov/dashboard/

ToxCast Data*:
http://epa.gov/ncct/toxcast/data.html

ACToR:
http://actor.epa.gov/actor

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