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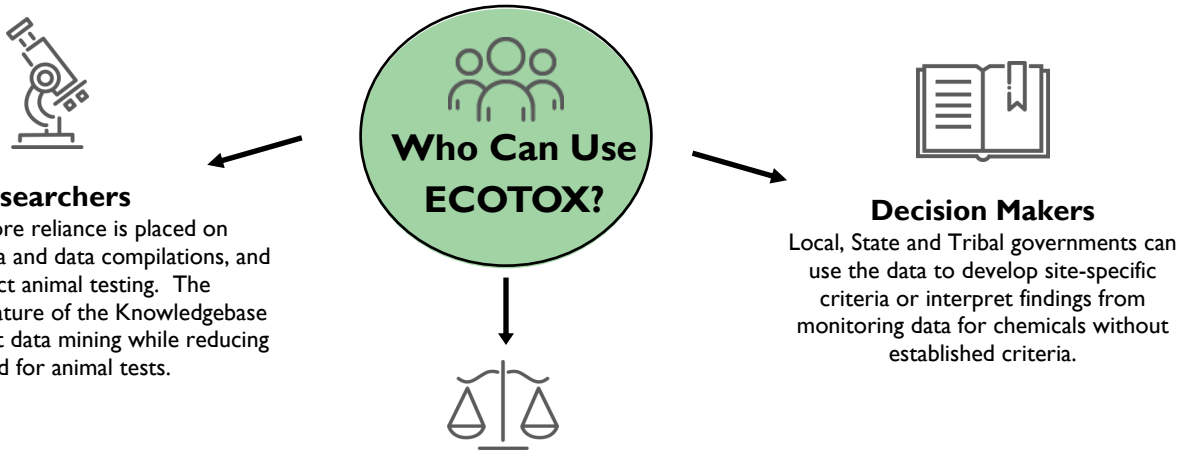
INNOVATIVE RESEARCH FOR A SUSTAINABLE FUTURE

ECOTOX Knowledgebase

What is the ECOTOX Knowledgebase?

The ECOTOX Knowledgebase is a comprehensive, publicly available application providing chemical environmental toxicity data on aquatic life, terrestrial plants and wildlife. Data are curated from scientific literature after an exhaustive search protocol. ECOTOX is updated quarterly and as of September 2020, data were available for over 12,200 chemicals and 13,200 species from more than 50,000 published references capturing more than 1,000,000 test results. For more than 20 years, ECOTOX has been used as a rapid source for toxicity data to develop chemical benchmarks for water and sediment quality assessments. ECOTOX data is used to help design aquatic life criteria to protect both freshwater and saltwater organisms from short-term and long-term exposure. It is also used to inform ecological risk assessments for chemical registration and re-registration. Additionally, the data is used to aid in the prioritization and assessment of chemicals under the Toxic Substances Control Act (TSCA).

ECOTOX is used to develop and validate models to extrapolate data from *in vitro* (cell-based) to *in vivo* (whole organism) effects and across species to evaluate the safety of chemicals. The Knowledgebase is useful for building quantitative structure activity relationship (QSAR) models to predict toxicity based on physical characteristics of a chemical's structure, as well as to conduct data gap and meta-analyses to support current or guide future research and assessment needs.



ECOTOX *in ACTION*

CHEMICAL AND NATURAL DISASTER RESPONSE: ECOTOX be can used for emergency response actions by rapidly providing ecologically relevant data from publications in scientific literature and government (grey) documents that can be used for immediate decision making. Some examples are the 2014 Elk River chemical spill in West Virginia, as it provided unique access to EPA toxicity data that was not published in scientific literature for assessment of risk to fish. After Hurricane Katrina, ECOTOX was used as a rapid source for toxicity data to develop chemical benchmarks for water and sediment quality assessments.

INTERAGENCY RESOURCE: ECOTOX has been used by the National Oceanic and Atmospheric Administration (NOAA) to assess and remediate chemical spills in companion with NOAA's "Chemical Aquatic Fate and Effects" database, which is a software program that risk assessors can use to estimate the fate and effects of thousands of chemicals, oils and dispersants.

RESEARCH IMPLEMENTATION RESOURCE: Adverse Outcome Pathways (AOPs) are frameworks that assemble knowledge about biological events that can be used to help interpret how a stressor (e.g., chemical) can lead to an adverse health effect in an organism. Continued enhancements to the ECOTOX Knowledgebase are specifically aimed to further the development of AOPs for both pathway discovery purposes and implementation of AOP frameworks in regulatory applications.

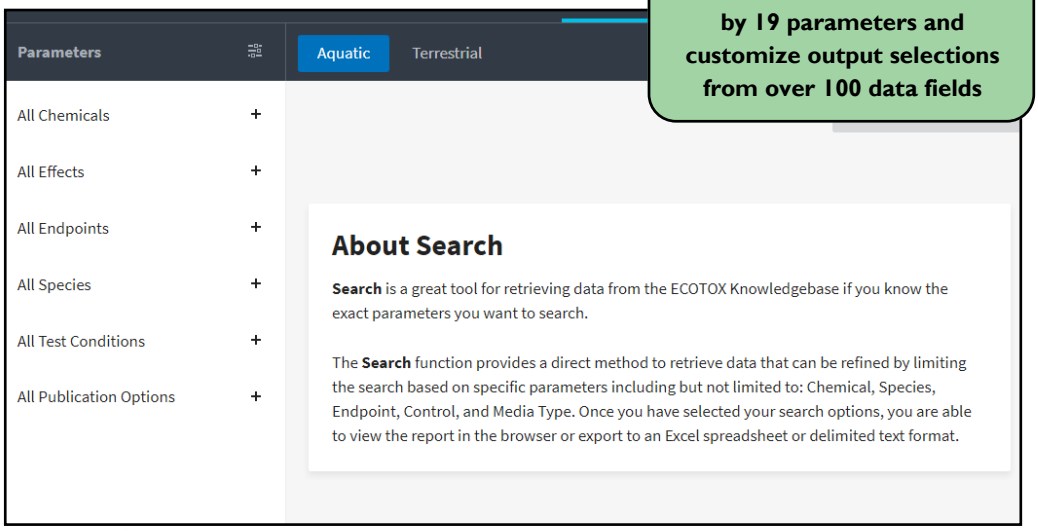
Visit ECOTOX: https://www.epa.gov/ecotox/

Learn More about ECOTOX 5.0

Refine and filter data searches by 19 parameters and customize output selections from over 100 data fields

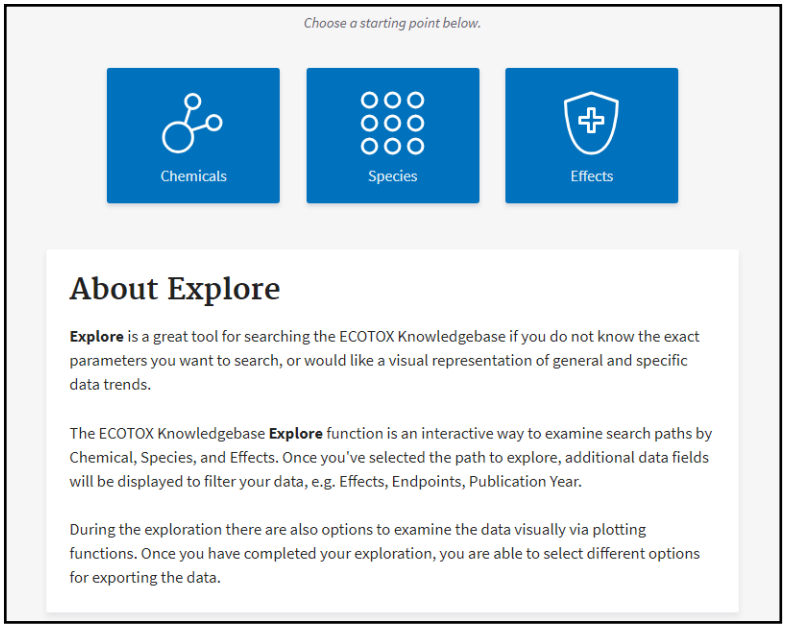
SEARCH feature:

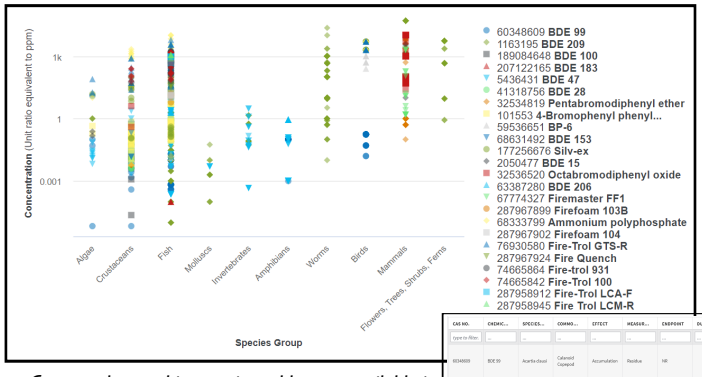
New SEARCH feature on the Knowledgebase can be used to select and search for data on a specific Chemical (with a link to the CompTox Chemicals Dashboard to give you more information about your chemical) or Species, Effect, or Endpoint of interest to find information in the ECOTOX Knowledgebase.



EXPLORE feature:

New EXPLORE feature on the Knowledgebase can be used when the exact parameters for a search are not known. You can search by Chemical, Species, or Effects. Additional data fields allow you to customize your output results for import into other tools.





Custom plots and interactive tables are available in ECOTOX for data exploration and visualization.

DATA VISUALIZATION features:

New DATA VISUALIZATION features in the Knowledgebase can be used to view your results while exploring data. Data plots are interactive. Features allow you to hover over data points and scroll to zoom in on specific sections of data to retrieve the information of interest.

Visit ECOTOX:
https://www.epa.gov/ecotox/

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