QSAR Toolbox v.4.8 - Release notes

This list summarizes the latest developments and implementations in QSAR Toolbox 4.8.

I. Install

The QSAR Toolbox requires the installation of .NET 8.0. Two options are provided with the installation package.

- One is an online installer that requires the computer to be connected to the Internet but has the benefits of querying for the latest version.
- The other, offline installer, may be a bit outdated but has the benefit of not having to wait for a download and does not require Internet connectivity.

II. General modifications in the software

- **Import and visualization of structural and metadata information for substances belonging to metabolism databases**
  - From Input/Metabolite Database, a metabolism database can be loaded and the structural information of the substances can be visualized on the data matrix.
  - From the new subsection implemented in the Data section – Data/Metabolite Databases - data from metabolism databases can be collected and visualized on the data matrix. This includes quantitative information for parents and metabolites, test organisms, matrix, etc.
  - The experimental data for parent and metabolites collected from metabolism databases appear on a new level of the Endpoint tree – Observed metabolism
  - Specific labels indicate whether the experimental data is for a parent chemical (PC) or a transformation product (TP).
  - A new meta data field of the experimental data has been added, allowing direct visualization of the metabolic map to which a parent or metabolite belongs to.
  - A new profiler has been developed in the Profiling section, part of the Predefined list - Metabolic Database Affiliation. It provides information for the name of the metabolism database the substance(s) loaded on the data matrix belongs to and whether the substance is presented in the database as a parent chemical or as a metabolite.
- **Profilers and simulators**
  - Modifications in the alerts/functional groups

- Updated transformation tables

- **Databases and inventories**
  - Updated are two databases and one inventory
  - Two new databases are available as plugins
- **UICLID export prediction wizard**
  - Export prediction results to specific QAF fields in IUCLID – the new fields associated with QAF are indicated with specific flag (QSAR Assessment Framework (QAF) field).
  - The export wizard has been modified to better represent individual sections.
- **Cache updates**
  - Profiling and metabolism caches
  - 2D and 3D parametric caches
- **Documentation**
  - Update of F1 help
  - Update of documentation of profilers, simulators and databases
- **Updates to the Repository**
  - Two new databases as plugins are available - "*Ecotox pharmaceuticals database*" and "*EFSA Public MetaPath database*"
- **Updates to the Web client**
- **Other modifications and updates**
  - Expansion of the Query tool allowing searching by taxonomy information
  - Expansion of the Workflow editor to work with specific information from metabolism databases.

III. Input

New functionality is implemented - "Metabolite Database", allowing loading of the structural information from metabolism databases.

IV. Profiling schemes

1. New profilers
   - Metabolic Database Affiliation – indicating whether a substance or a list of substances loaded on the data matrix belong to a metabolism database

2. Updated profilers – 13 profilers have been updated
    - Hydrolysis half-life (pH 6.5-7.4)
    - Toxic hazard classification by Cramer

      Significant modifications in the Cramer profiling scheme have been done in terms of providing more transparent results, increasing the performance and improving the reporting capabilities.
    - Acute Oral Toxicity
    - DART scheme
    - DNA alerts for AMES, CA and MNT by OASIS
    - Oncologic Primary Classification
    - rtER Expert System - USEPA
    - Organic functional groups
    - Organic functional groups (nested)
    - Organic functional groups (US EPA)
    - Organic functional groups, Norbert Haider (checkmol)
    - Tautomers unstable
    - Repeated dose (HESS)

Note: A summary of the updates and modifications to the profiling scheme can be found in the corresponding changelog sections (Select profiling scheme>View>Scheme sheet– find the changelog sheet in the middle of the screen; or go to the About> Documentation> find the changelog section in the document)

V. Documented/simulated metabolism

- Documented metabolism databases – one new metabolism database "*EFSA residues public*" which will be available in this section once downloaded and installed from the Repository website.
- Updated metabolic simulators – seven updated metabolic simulators
    - Autoxidation
    - Hydrolysis neutral
    - Hydrolysis acidic
    - Hydrolysis basic
    - Microbial metabolism
    - In vitro rat liver

- In vivo rat liver

Note: A summary of the updates and modifications to the simulators can be found in the corresponding changelog sections described in: About> Documentation> find the changelog section in the document.

VI. Data and data matrix

1. New endpoint tree level is implemented "*Observed metabolism*", where data from metabolism database are visualized.
2. New subsection in the Data module is implemented "*Metabolite Databases*", allowing selection of metabolism databases for collecting experimental data for parents and metabolites.
3. Specific labels indicate whether the experimental data collected from metabolism databases is for a parent chemical (PC) or for a transformation product (TP).
4. A new meta data field of the experimental data has been added (accessed through double click on experimental data value on the data matrix), allowing direct visualization of the metabolic map to which a parent or metabolite belongs to.

VII. Databases and inventories

1. New and updated databases

#	Name of the database	Status	Number of updated/new chemicals with data
1	ECOTOX	updated	97/ 38,676
2	Hydrolysis DB	updated	18 / 18
3	Ecotox pharmaceuticals*	new	362 / 1,087
4	EFSA residues public*	new	211/ 11,000

*Available as downloadable plug-ins at the Repository

2. Updated inventories

#	Name of the inventory	Status	Number of new chemicals
1	AICS Inventory	updated	74

VIII. Category definition

No updates

IX. Data Gap Filling

- Expansion of the Workflow editor associated with documented metabolism

X. Query tool

- Possibility to search by taxonomy information

XI. Repository

- **New plugins**

  Two new databases have been added which can be automatically downloaded and installed by using the Repository client:

  - Ecotox pharmaceuticals – consisting of 362 pharmaceutical chemicals with toxicity values of EC50, IC50, LC50 and NOEC values for various aquatic species (algae, crustaceans or fishes)
  - EFSA residues public – a Metapath database of 211 substances and 11,000 data including metabolic maps, quantities, matrices, species, etc. for parents and metabolites.

- **Updated plugins –** two plugins

  - KATE plugin - for predicting toxicity to aquatic organisms
  - ECHA Unlocking plugin

XII. Web Client

The version number has been aligned to match the major.minor version of the desktop app. This aims to reduce confusion.

- Data matrix section:
  - fixed issues related to Excel export
  - fixed issues related to loading a list with SMILES
  - fixed an issue related to loading a list with CAS numbers
  - fixed an issue related to metabolites retrieval
  - fixed an issue related to the application of QSAR models
  - added index numbers in the load list component
  - hid private CAS numbers (negative numbers)

- IUCLID search section:
    - fixed an issue preventing IUCLID search results listing
    - enabled depiction of structures from IUCLID search results
    - enriched IUCLID search export with title details and SMILES