Exposure assessment in Chesar
Outline

• Introduction
• Contributing scenarios (conditions of use)
• Release/exposure estimation
• Risk characterisation
• Environmental assessment for aggregated sources
Exposure assessment is to be carried out in Box 3 by selecting a contributing activity in the life cycle tree.
   - Both quantitative and qualitative assessment are carried out in Box 3.

When selecting a contributing activity in the life cycle tree, on the right pane you can see:
   - The (release and) exposure tab is selected, containing:
     - Conditions of use
     - Release
     - Exposure estimates
     - Daily intake in food items estimated by EUSES
   - The risk characterisation tab
   - A “validate assessment” button

* in green, specific to contributing activity for the environment
Life cycle tree

Expand/collapse

Release and exposure

Risk characterisation

Validate assessment

Conditions of use

Conditions based on Manual selection

Releases

Exposure estimates

Daily intake via food item estimated by EUSES 2.1.2

Help text

can be expanded or collapsed
Release and exposure

Conditions of use
Conditions based on Manual selection

Releases

Exposure estimates

Daily intake via food item estimated by EUSES 2.1.2
Conditions of use

• Conditions of use can be:
  – Manually selected
  – Pre-populated by harmonised elements:
    • SPERCs for the environment
    • SCEDs or ECETOC TRA subcategories for consumer
    • (SWED for workers not yet implemented)
E-W-1: Product (article) characteristics

E-W-2: Amount used, frequency and duration of use (or from service life)

Daily use amount at site \(\leq 3.2\) tonnes/day

Annual use amount at site \(\leq 320\) tonnes/year

E-W-3: Technical and organisational conditions and measures

E-W-4: Conditions and measures related to biological sewage treatment plant

Biological STP: Standard \(\text{Wat. effect.} = 22.15\%\)

Discharge rate of STP \(\geq 2\times10^3\) m\(^3\)/d

Application of the STP sludge on agricultural soil: Yes

E-W-5: Conditions and measures related to external treatment of waste (including article waste)
Built-in conditions of use present by default

- For the environment:
  - Use amount
  - Biological STP
  - Receiving surface water flow rate
  - Particular considerations for waste treatment operations

- For workers:
  - Percentage (w/w) of substance in mixture
  - Physical form of the used product
  - Duration of activity
  - Place of use
  - Operating temperature

- For consumers:
  - Percentage (w/w) of substance in mixture
  - Physical form of the used product
Selecting conditions of use

- When the conditions of use are based on a SPERC or a SCED, those should be present in your library
  - Rules are implemented to filter out relevant SPERC/SCED (ERC, PC, …)

- When the conditions of use are manually selected, you have to select those you want to add in your contributing scenario from your library
Use in rigorously contained system

- Uses in rigorously contained system:
  - With minimisation of release
  - With strict control for manual intervention can be flagged
- Such information is exported to IUCLID and can be used by the authorities when prioritising substances for further regulatory actions (low priority)
- Description of the conditions of use is key
- Residual release/exposure should be provided

**Conditions of use**

- Rigorously contained system with strict control for manual interventions
  (Applies to all contributing scenarios of this exposure scenario)

- Description of non-technical means for strict control
Conditions of use

Conditions based on Manual selection

Releases

Exposure estimates

Daily intake via food item estimated by EUSES 2.1.2
Release estimation (environment)

• Four methods for release estimation are available:
  – SPERC-based if SPERC is selected for the conditions of use
  – ERC-based
  – Based on an estimated release factor
  – Based on a measured release rate
Selected substance: ECHA substance  Selected CSA: CSR example

Add default exposure datasets  Bulk edit mode  ?

Release and exposure  Risk characterisation  Validate assessment

Conditions of use

Conditions based on Manual selection

Releases

Exposure estimates

Daily intake via food item estimated by EUSES 2.1.2
Exposure datasets (estimates)

• Per protection target/route and type of effect exposure estimates are required for quantitative risk characterisation and may be useful for qualitative risk characterisation
• Three exposure estimation methods:
  – Built-in tool: exposure calculated in Chesar (ECETOC TRA workers and consumers, EUSES)
  – External tool: exposure estimates, explanations if relevant, and related conditions of use are manually reported or are imported in a Chesar format
  – Measured data: manually reported in Chesar
• Risk characterisation ratios (RCR) are displayed
The “validate assessment” button

- Provides information on exposure datasets obtained through built-in tools, such as:
  - Substance properties boundaries supported by the tool
  - Explanations why no exposure is provided due to applicability domain of the tool
Logged in as admin (logout)
About Chesar

Selected substance: ECHA substance  Selected CSA: CSR example

Add default exposure datasets  Bulk edit mode

Exposure  Risk characterisation  Validate assessment

Conditions of use

Exposure estimates
Risk characterisation

• The risk characterisation type [per protection target/route and type of effect] depends on the hazard conclusion (imported from IUCLID)
  – Risk characterisation icon 
    ![Green Checkmark] ![Red Exclamation]
• For quantitative risk characterisation: RCR calculated on the basis of previously reported main exposure
• For qualitative risk characterisation
  – “Risk controlled flag” to be set (after checking conditions of use and providing explanations)
  – For local effect on skin and eye, can be controlled by concentration in mixture (“concentration limit” set in Box 1, in the tab Hazard conclusion and scope of assessment)
## Risk characterisation

### Route, type of effect

<table>
<thead>
<tr>
<th>Route, type of effect</th>
<th>Hazard conclusion</th>
<th>Risk characterisation type</th>
<th>RCR</th>
<th>Risk controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation, systemic, long term</td>
<td>DNEL (Derived No Effect Level) <strong>24.7 mg/m³</strong></td>
<td>Quantitative</td>
<td>0.101</td>
<td>✔</td>
</tr>
<tr>
<td>Inhalation, systemic, short term</td>
<td>No hazard identified</td>
<td>Not needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation, local, long term</td>
<td>Low hazard (no threshold derived)</td>
<td>Qualitative</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Inhalation, local, short term</td>
<td>Low hazard (no threshold derived)</td>
<td>Qualitative</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal, systemic, long term</td>
<td>DNEL (Derived No Effect Level) <strong>7 mg/kg bw/day</strong></td>
<td>Quantitative</td>
<td>0.039</td>
<td>✔</td>
</tr>
<tr>
<td>Dermal, systemic, short term</td>
<td>No hazard identified</td>
<td>Not needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal, local, long term</td>
<td>Low hazard (no threshold derived)</td>
<td>Qualitative</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Dermal, local, short term</td>
<td>Low hazard (no threshold derived)</td>
<td>Qualitative</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td><strong>Eye</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye, local</td>
<td>Low hazard (no threshold derived)</td>
<td>Qualitative</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td><strong>Combined routes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined, systemic, long term</td>
<td></td>
<td>Quantitative</td>
<td>0.14</td>
<td>✔</td>
</tr>
</tbody>
</table>

- **manually set flag**
- **controlled by concentration**
Environmental assessment for aggregated sources

- Regional assessment: taking into account all sources:
  - default calculated with EUSES
  - Possibility to use other data sets
- Assessment for widespread uses: local assessment for all widespread uses (read only)