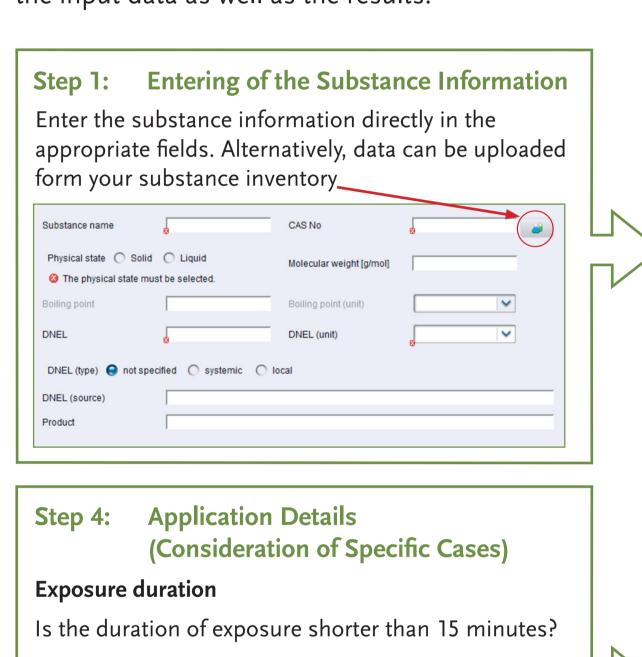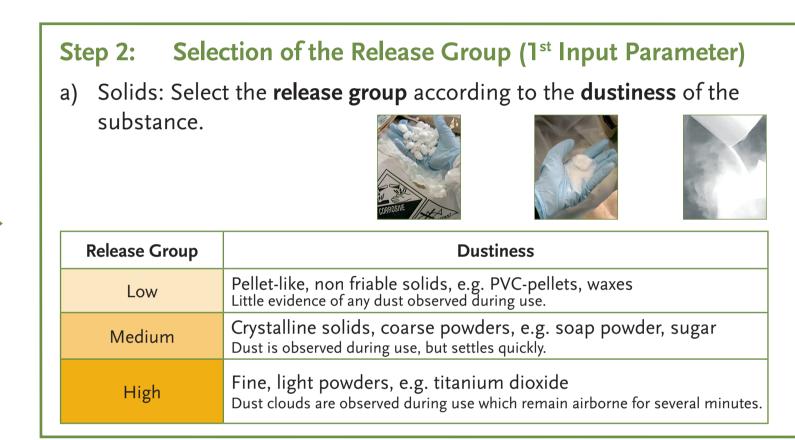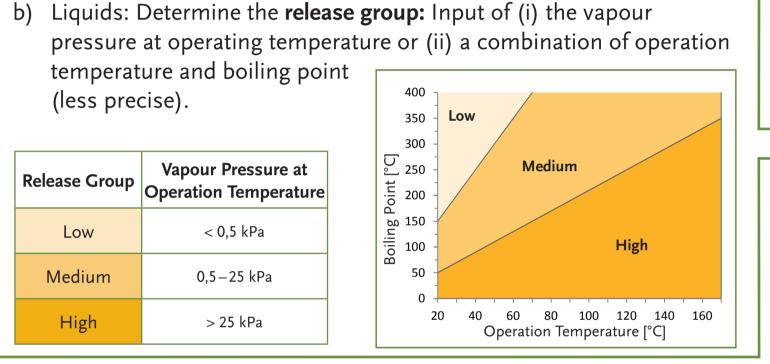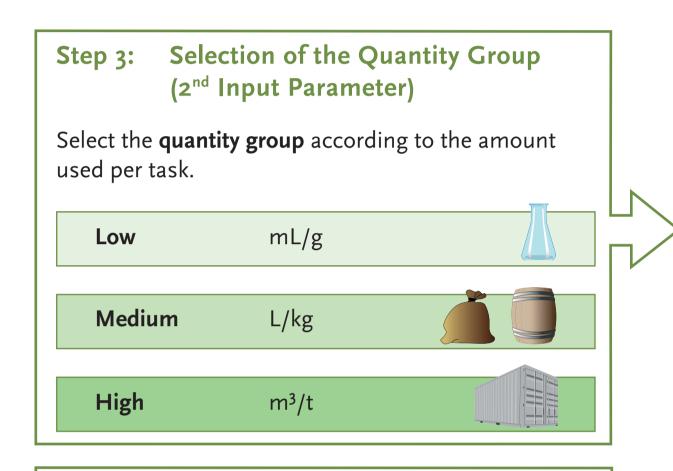# EMKG-Expo-Tool 2.0

The EMKG-Expo-Tool 2.0 is a first tier IT-tool to estimate the inhalation exposure at the workplace to fulfil the obligations arising from REACH. The tool uses a control banding approach, based on the "Easy-to-use workplace control scheme for hazardous substances (EMKG)". Requiring only three input parameters, the tool's simple structure enables the user to distinguish quickly between critical and non-critical workplace situations. The tool offers a simplified approach to evaluate worker exposure and identify RMMs requiring a small number of input parameters. Thus the tool is easy to use and still allows quantitative exposure estimations.
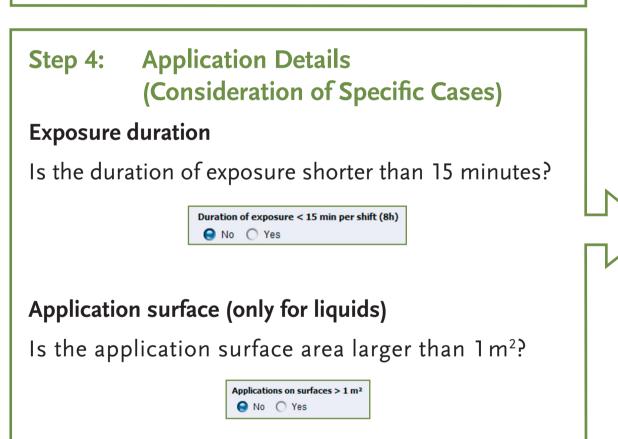
The EMKG-Expo-Tool comprises nine different steps. In the first five steps the exposure potential of the relevant substance is determined. In step six the risk management measures implemented at the workplace are assigned to a control strategy. To support this selection, BAuA provides a set of REACH control guidance sheets. A combination of the exposure potential and the control strategy results in a specific exposure band which is displayed in step seven. This is followed by a comparison of the upper end of this exposure band with the Derived No Effect Level (DNEL) in step eight. The result provides a statement whether the risks at the workplace are adequately controlled within the scope of REACH. Finally, in step nine, a report is generated which summarises the input data as well as the results.
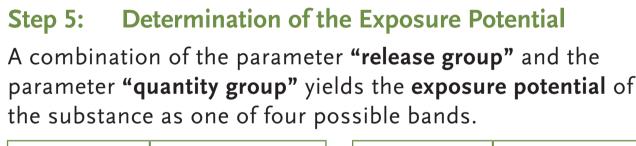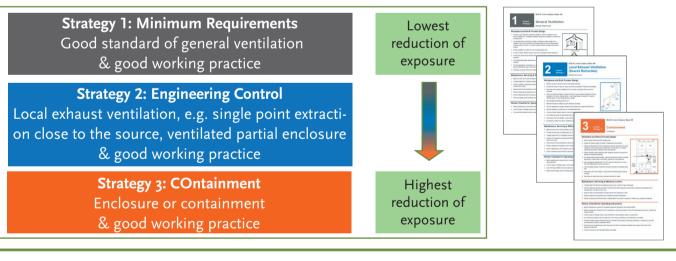
Step 1: Entering of the Substance Information

Enter the substance information directly in the appropriate fields. Alternatively, data can be uploaded form your substance inventory

Step 2: Selection of the Release Group (1st Input Parameter)

a) Solids: Select the **release group** according to the **dustiness** of the substance.

Release Group	Dustiness
Low	Pellet-like, non friable solids, e.g. PVC-pellets, waxes Little evidence of any dust observed during use.
Medium	Crystalline solids, coarse powders, e.g. soap powder, sugar Dust is observed during use, but settles quickly.
High	Fine, light powders, e.g. titanium dioxide Dust clouds are observed during use which remain airborne for several minutes.

b) Liquids: Determine the **release group:** Input of (i) the vapour pressure at operating temperature or (ii) a combination of operation temperature and boiling point (less precise).

Release Group	Vapour Pressure at Operation Temperature
Low	< 0,5 kPa
Medium	0,5 – 25 kPa
High	> 25 kPa

Step 3: Selection of the Quantity Group (2nd Input Parameter)

Select the **quantity group** according to the amount used per task.

Low	mL/g
Medium	L/kg
High	m³/t

Step 4: Application Details (Consideration of Specific Cases)

Exposure duration

Is the duration of exposure shorter than 15 minutes?

Duration of exposure < 15 min per shift (8h)
○ No ○ Yes

Application surface (only for liquids)

Is the application surface area larger than 1 m²?

Applications on surfaces > 1 m²
○ No ○ Yes

Step 5: Determination of the Exposure Potential

A combination of the parameter **"release group"** and the parameter **"quantity group"** yields the **exposure potential** of the substance as one of four possible bands.

Exposure Potential Band Solids		Release Group		
		Low	Medium	High
Quantity Group	Low	1	1	2
	Medium	2	3	3
	High	2	4	4

Exposure Potential Band Liquids		Release Group		
		Low	Medium	High
Quantity Group	Low	1	2	2
	Medium	2	3	3
	High	2	3	4

For applications of liquids on surfaces larger than 1 m² the resulting exposure potential band is automatically increased by one.

Step 6: Control Strategy (3rd Input Parameter)

Choose the **control strategy** which reflects the control measures implemented at the workplace. To support your selection BAuA provides a set of REACH control guidance sheets.

Strategy 1: Minimum Requirements Good standard of general ventilation & good working practice — Lowest reduction of exposure

Strategy 2: Engineering Control Local exhaust ventilation, e.g. single point extraction close to the source, ventilated partial enclosure & good working practice

Strategy 3: COntainment Enclosure or containment & good working practice — Highest reduction of exposure

Step 7: Determination of the Exposure Band

The tool determines the **exposure band** by combining the **exposure potential** and the selected **control strategy**. (Example: Table for duration of exposure > 15 min).

		Exposure Potential Band			
Exposure Band		1	2	3	4
Solids [mg/m³] Liquids [ppm]					
Control Strategy	1	0.01 – 0.1 <5	0.1 – 1 5 – 50	01 – 10 50 – 500	> 10 > 500
	2	0.001 – 0.01 <0.5	0.01 – 0.1 0.5 – 5	0.1 – 1 5 – 50	1 – 10 5 – 500
	3	0.001 <0.001	0.001 – 0.01 0.05 – 0.5	0.01 – 0.1 0.5 – 5	0.1 – 1 0.5 – 5

Step 8: Estimation of the Risk

The expected exposure level, which is the upper end of the exposure band, is now compared with the DNEL or other reference values (national OELV, IOELV, BOELV, ...). The tool determines if the use of the substance under these conditions (described e.g. in the control guidance sheet) can be considered as adequately controlled.

If the resulting risk characterisation ratio (RCR) is < 1, the **risks are adequately controlled:** Exposure below reference value ✔
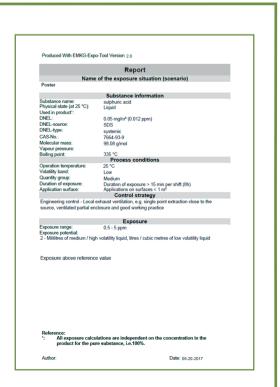
If the exposure level is higher than the DNEL (RCR > 1) the **risks cannot be the regarded as adequately controlled:** Exposure above reference value ✖

In the latter case, two options can be considered:
1. Select a higher control strategy and check using the tool, whether this adjustment yields an adequate control of the risks, or
2. Conduct a higher tier assessment with a different tool.

Step 9: Report

Finally, irrespective of the outcome of the risk characterisation, the tool generates a report. This report lists all input parameters as well as the results of the assessment. In addition, the control guidance sheets used to select the appropriate control strategy can be added. This allows the generation of a comprehensive exposure scenario which passes the complete safe *use conditions* down the supply chain.

Use of the EMKG-Expo-Tool

- Estimation of the exposure to a substance or a substance in a mixture to fulfil the legal obligations under REACH
- Communication of the safe use conditions along the supply chain.

The EMKG-Expo-Tool is not appropriate for:

- CMR substances
- situations where dust is formed through abrasive techniques
- open spraying applications
- the handling of gases

: helpdesk
reach-clp-biozid