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Instructions for evaluating the reliability and relevance of ecotoxicity and nano-ecotoxicity studies using the CRED tool (Moermond et al. 2016), the NanoCRED tool (Hartmann et al. 2017), and the EthoCRED tool (Bertram et al. 2024) available at scirap.org.

Evaluating the study

Please use the respective Excel file available at www.scirap.org.

When evaluating the study, indicate how well each criterion is met by selecting an alternative from the drop-down menu to the right of each criterion. In the EVALUATION RESULT column (Fig. 1), choose between "Fulfilled", "Partially fulfilled", "Not fulfilled", and "Not reported".

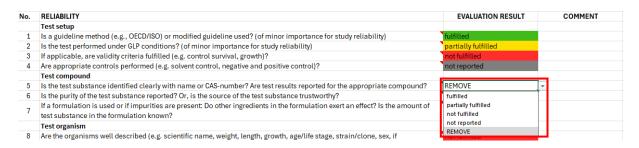


Fig. 1 Drop-down menu for the criteria in Reliability sections of the CRED tools.

Guidance from Moermond et al. (2016) for the CRED tool, Hartmann et al. (2017) for the NanoCRED tool, and Bertram et al. 2024 for the EthoCRED tool is provided by pointing to the criterion with the cursor (the criterion containing guidance has a red right corner, Fig. 2).

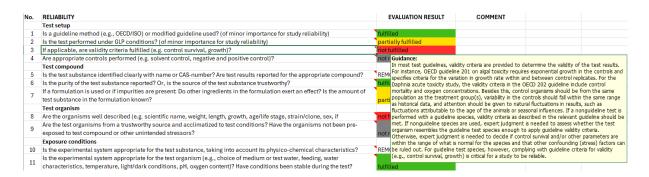


Fig. 2 Guidance for evaluating each criterion in the CRED tools.

Motivations and notes can be added in the "COMMENT" column (Fig. 3).

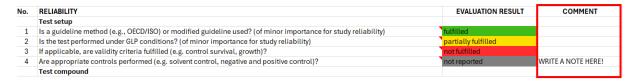


Fig. 3 Writing a note in the "COMMENT" column.

Removing criteria

Criteria that are not applicable to the specific study or question being assessed may be removed from the evaluation by clicking "REMOVE" in the EVALUATION RESULT column. Motivations for removing criteria can be given in the comment fields. Please note that removing criteria will affect the colour profile and score, and this may be important to consider when comparing studies within the same study design.

Interpreting the results

The results of the study assessment are shown below the relevance section of the CRED tools. In the colour profile (Fig. 4), the evaluations of reliability and relevance are illustrated in bar charts, showing green for fulfilled criteria, yellow for partially fulfilled and red for criteria that were not fulfilled. Criteria that were "not reported" are shown as grey. The bar charts do not include criteria that have been removed.



Fig. 4 The evaluations of reliability and relevance are illustrated in bar charts.

Assigning the study to reliability and relevance categories

The result of the evaluation can be used, in combination with expert judgment, as basis for assigning studies into different reliability and relevance categories. The following categories are suggested:

a. Reliability categories - CRED and EthoCRED

- Reliable without restrictions: All critical reliability criteria for this study are fulfilled. The study is well designed and performed, and it does not contain flaws that affect the reliability of the study.
- Reliable with restrictions: The study is generally well designed and performed, but some
 minor flaws in the documentation or setup may be present. Not reliable: Not all critical
 reliability criteria for this study are fulfilled. The study has clear flaws in study design
 and/or how it was performed.
- Not reliable: Not all critical reliability criteria for this study are fulfilled. The study has clear flaws in study design and/or how it was performed.
- Not assignable: Information needed to make an assessment of the study is missing. This
 concerns studies that do not give sufficient experimental details and that are only listed
 in abstracts or secondary literature (books, reviews, etc.) or studies of which the
 documentation is not sufficient for assessment of reliability for one or more vital
 parameters.

b. Reliability categories - NanoCRED

- Reliable without restrictions: All critical and important reliability criteria are fulfilled or
 partially fulfilled. The study is well designed, performed and documented. Nanomaterial
 properties and behaviour in the test system is extensively documented. The experiment
 has been carried out according to methods that are considered scientifically appropriate
 for ecotoxicity testing of nanomaterials and where the physicochemical properties of the
 nanomaterial are considered in the test design. If (when) specific nanomaterial guidance
 or guidelines exist, the use of these may be considered favourable.
- Reliable with restrictions: Most critical and important criteria are fulfilled or partially fulfilled. The study is generally well designed, performed and documented, but some minor flaws in the documentation or setup may be present. Nanomaterial properties and behaviour in the test system is well documented. The experimental design and test method are considered scientifically appropriate for ecotoxicity testing of nanomaterials but may contain some minor flaws in documentation or setup.
- Not reliable: Not all critical reliability criteria are fulfilled or partially fulfilled. This mainly
 concerns studies which have clear flaws in study design and study conduction, and/or
 where the experimental design and test method are considered not to be scientifically
 appropriate for ecotoxicity testing of nanomaterials.
- Not assignable: Information needed to make an assessment of one or more critical and important criteria is missing. This concerns studies or data from the literature which do not give sufficient experimental details, or reports where the documentation is not sufficient for assessment of reliability for one or more critical parameters.

c. Relevance categories - all substances

- Relevant without restrictions: The study is relevant for the purpose for which it is evaluated.
- Relevant with restrictions: The study has limited relevance for the purpose for which it is evaluated.
- Not relevant: The study is not relevant for the purpose for which it is evaluated.
- Not assignable: Studies that do not give sufficient details since the result is presented in abstracts or secondary literature (books, reviews, etc.) or studies of which the documentation is not sufficient for assessment of relevance for one or more vital parameters.

Contact

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References

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