

Finding Practical Answers to Environmental Exposure Assessment Questions

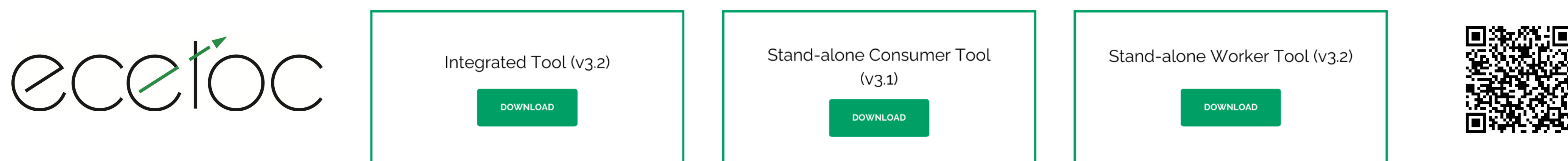
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INTRO AND BACKGROUND

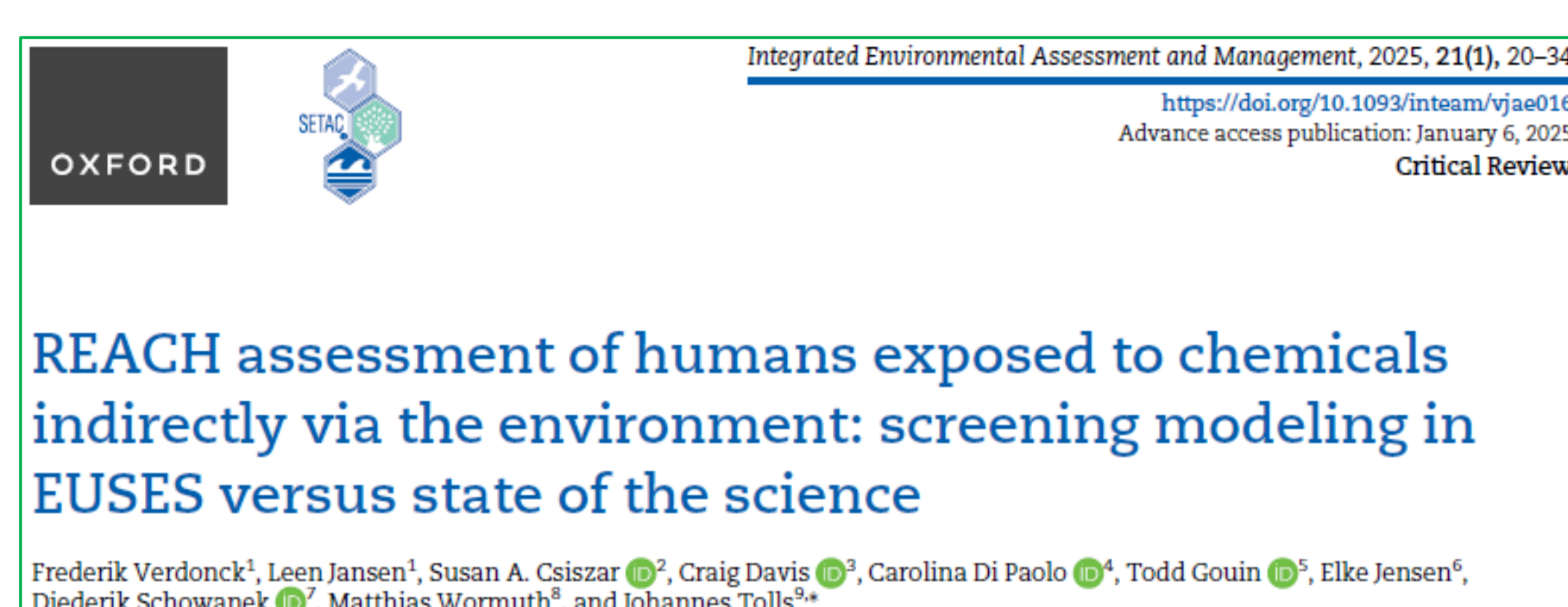
ECETOC's **Targeted Risk Assessment (TRA) tool** is a widely accepted Tier 1 screening tool to assess chemical exposure risks for workers, consumers, and the environment in a regulatory context (e.g. under the REACH Regulation).



ECETOC assigns high priority to **maintaining the TRA tool** as a trusted resource in chemical safety assessments and to **advancing the science** of exposure assessment as a whole.

Here we present recent and anticipated future activities relating to tool maintenance and advancing the science of environmental exposure assessment.

INDIRECT EXPOSURE OF HUMANS VIA ENVIRONMENT

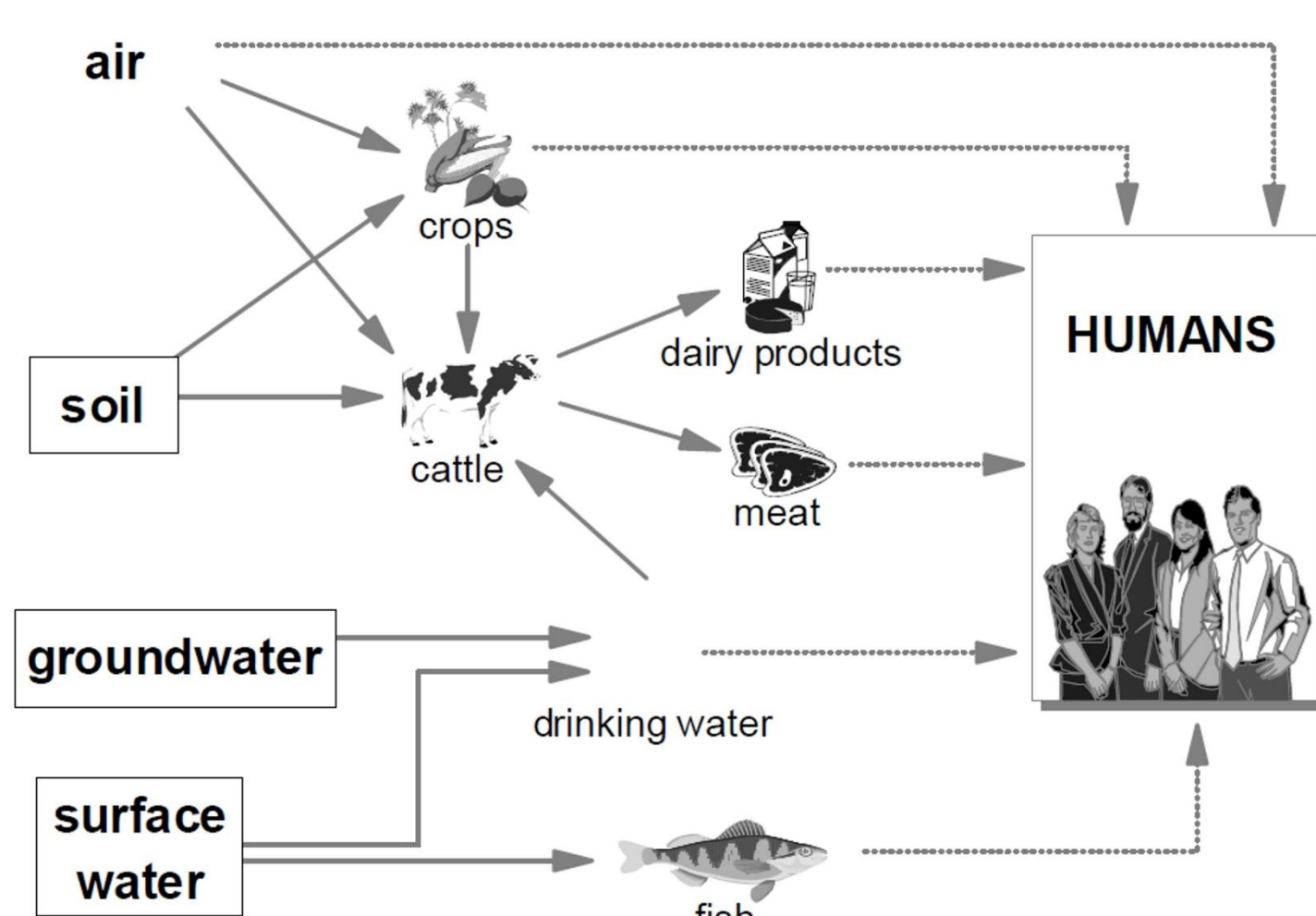


Relates to potential **unintentional indirect exposure of humans to chemicals via the environment**.

The state-of-the-science of such assessments was reviewed and opportunities for model advancement identified.

Findings and recommendations:

- The default EU tool (EUSES) provides a conservative screening evaluation;
- **New models could be integrated** to 1) broaden the applicability domain; and 2) improve prediction accuracy;
- **Update assumptions regarding food consumption** to reflect recent dietary trends;
- **Research to more realistically reflect fate and other processes** related to potential exposure via crops and drinking water;
- **Update REACH Guidance** to define EUSES limitations and possible assessment refinements.



Source: European Chemicals Agency, <http://echa.europa.eu/> [ECHA, 2016]

UNIFIED APPROACH TO SIMPLETREAT MODELING



SimpleTreat = a model used in environmental risk assessment to evaluate a chemical's fate and removal efficiency in a WWTP

A collaborative study with ECCC[#] and RIVM^{\$} revealed significant differences in SimpleTreat predictions and underlying causes.

[#]Environment and Climate Change Canada; ^{\$}Netherlands National Institute for Public Health and the Environment

Recommendations:

- Use a **hierarchical framework to select data inputs**, with high-quality experimental data prioritised if available;
- Careful consideration of the **ionic or dissociation state of chemicals**;
- Select the **appropriate aeration settings** for the WWTP;
- **Documentation** of all data sources and model settings.



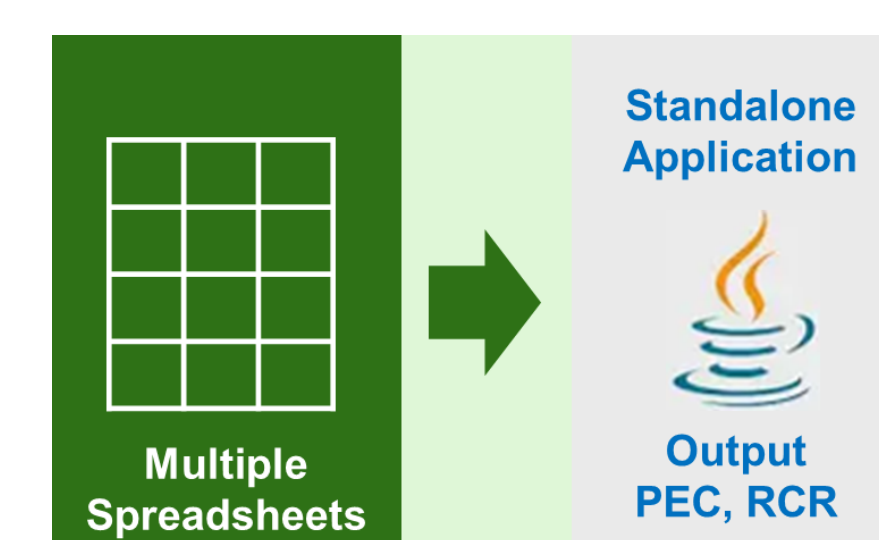
REVAMPED TRA ENVIRONMENT TOOL COMING SOON!

Ongoing: Migration of TRA Environment tool from multiple excel spreadsheets to standalone application.

Maintain the current functionalities.

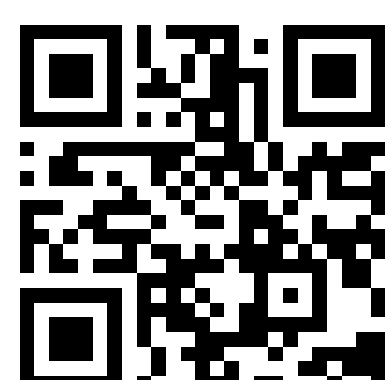
The tool will remain freely available!

Enhance user-friendliness.



References

- Burns TD, Beking M, Shen J, De Knecht J, Bakker J, van Vlaardingen P, Tolls J, Gouin T. A unified approach to SimpleTreat input and settings for wastewater treatment removal predictions. Integr Environ Assess Manag. 2025 Jan 6:vjw049. doi: 10.1093/teams/vjw049. Epub ahead of print. PMID: 39817643.
- Verdonck F, Jansen L, Csiszar SA, Davis C, Di Paolo C, Gouin T, Jensen E, Schowanek D, Wormuth M, Tolls J. REACH assessment of humans exposed to chemicals indirectly via the environment: screening modeling in EUSES versus state of the science. Integr Environ Assess Manag. 2025 Jan 1;21(1):20–34. doi: 10.1093/teams/vjw016. PMID: 39879218.
- ECHA, 2016. Guidance on information requirements and chemical safety assessment. Chapter R.16: Environmental Exposure Estimation. Version 3.0, February 2016. European Chemicals Agency, Report ECHA-10-G-06-EN, 978-92-9247-775-2. Helsinki, Finland



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