Using Environmental Concentration Exposure Datasets in Environmental Assessments: The Development of Criteria for Reporting and Evaluating Exposure Datasets (CREED)

SETAC WORKSHOP | MAY 2022 | COPENHAGEN, DENMARK

While environmental risk assessment relies on summary values generated from exposure datasets, regulatory guidance determining the suitability of these datasets for specific purposes does not exist in the same way it does for hazard and toxicity data. Exposure datasets should be evaluated for both reliability and relevance, much like toxicity data, to ensure appropriate use in, for example, chemical screening or prioritization, risk assessment, compliance assessment, and environmental status reporting. An examination of exposure data assessment guidance across jurisdictions shows there are considerable gaps; for some there are no requirements for information on limits of detections, and for others there is minimal guidance on how to process an exposure dataset to estimate an environmental concentration for use in assessment. Hence the urgent need for the environmental scientist practitioner community to come together and define best practices for exposure data assessment. Specifically, there is a need for practitioners to identify criteria for evaluating data in relation to reliability and especially relevancy, to develop best practice for combining and collating datasets from different sources, and to consider representativity and pragmatic, transparent expression of uncertainty.

The goals of the workshop are to:

- Review the available literature for best practices and guidelines regarding exposure data usability and applicability and develop a common anthology for the pragmatic use and evidence-based use of these data;
- Identify reliability and relevancy criteria for evaluating environmental concentration data; and,
- Propose approaches for summarizing data to facilitate 'fit for purpose' usage.

The scope of the workshop will include all chemicals, including transformation products, and it will focus on the water system. The workshop will prioritize fresh and marine waters, sediments and groundwater. Participants will work to identify best practices and reduce subjectivity in dataset assessment while avoiding an over prescription of environmental concentration dataset usage.

The workshop will be organized as a series of webinars designed to familiarize workshop participants with the exposure data evaluation guidelines under various jurisdictions, as well as novel approaches being used by practitioners. Participants will be expected to prepare plenaries and contribute to the discussion sessions and breakout groups, which will focus on relevance, reliability and best practice delivery. Each group will have the opportunity to utilize a bank of existing datasets to assist in the shaping of discussions and potentially for use as examples in subsequent workshop publications. All data will be publicly accessible monitoring data.

The organizing committee has identified some of the relevant guidance on exposure data assessment, as well as potential gaps and requirements. They have subsequently organized questions for workgroups around the following three areas: evaluating the reliability of exposure data, data relevance, and useability and practice implementation. The workshop co-chairs are forming a steering committee comprising three co-chairs and six workgroup chairs representative of stakeholders in academia, business, government and non-profit in various regulatory jurisdictions.

To ensure uptake and use of the best practices identified at the workshop, the outputs need to be useable by technical practitioners. One tangible output from the workshop will include a SETAC Technical Issue Paper that outlines acceptable minimum reporting and evaluation standards for exposure datasets, with the objection that this checklist will be incorporated into the SETAC journals' data transparency review process. Participants will also be invited to contribute to a series of journal articles and to present their findings at a future SETAC annual meeting.

SETAC workshops are designed for this type of work. SETAC workshops have a long history of bringing together environmental professionals, who advance the state of knowledge on various topics in environmental toxicology and chemistry and who work to resolve technical issues and identify solutions for pressing environmental challenges. The SETAC approach to planning and conducting workshops, which is based on SETAC's principles of multidisciplinary, multi-stakeholder engagement and science-based objectivity, is ideal for this topic.

The workshop co-chairs are **Graham Merrington**, wca, and **Lisa Nowell**, U.S. Geological Survey. Members of the steering committee include: Brad Clarke, University of Melbourne; Carolina Di Paolo, Shell; Leonard Oste, Deltares; Charles Peck, U.S. Environmental Protection Agency; Adam Ryan, IZA; Claus Svendsen, Center for Ecology and Hydrology; and Caroline Whalley, European Environment Agency.

The organizers are currently engaged in securing the necessary funding, which will go towards financing logistical coordination, technological resources and open access fees. If you are interested in contributing, please contact **Barbara Koelman**.