



Advanced Approaches for Species Surrogacy in Chemical Risk Assessment

1-2 November 2026 • Montreal, Quebec

Toward a Weight of Evidence Approach for Cross Species Extrapolation

Chemical risk assessment routinely relies on a limited number of sentinel species to inform protection of a much broader range of taxa. These surrogate species enable extrapolation of hazard and risk to related taxa or species of interest in the context of chemical risk assessment. While this practice is well established, it often relies on pragmatic safety factors or conservative precautionary approaches that sometimes lack grounding in mechanistic, exposure and/or ecological information.

Recent advances in toxicokinetics, toxicodynamics, comparative biology, species traits, computational modelling, and data integration provide new opportunities to strengthen the scientific basis for species surrogacy. In parallel, the increasing availability of curated toxicity databases and bioinformatics tools enables more transparent and defensible cross-species extrapolation (including humans). These scientific advances, often referenced as New Approach Methods (NAMs), are ready for review and synthesis to improve the approaches used for species surrogacy in chemical risk assessment and ultimately increase confidence in regulatory decision-making and replacing the need for vertebrate animals in testing.

The meeting objectives are to:

- ▶ Review current state of tools, methods, and data supporting cross-species extrapolation including for humans
- ▶ Identify regulatory and research scenarios where uncertainty in species surrogacy remains high
- ▶ Explore how multiple lines of evidence can be integrated using weight-of-evidence approaches
- ▶ Identify scientific and data gaps limiting broader adoption of advanced approaches
- ▶ Foster dialogue and collaboration between method developers, risk assessors and regulators
- ▶ Identify priorities for follow-up activities, including potential technical workshops and publications

This topical meeting will be structured around four interlinked scientific pillars, which will be explored as complementary components of an integrated, mechanistically informed approach to species surrogacy:

- 1. Toxicokinetics Across Species.** Evaluating of how interspecies differences in absorption, distribution, metabolism, and excretion influence chemical sensitivity, and how toxicokinetic data and models can inform extrapolation.
- 2. Toxicodynamics and Pathway Conservation.** Assessing conservation of molecular targets, genes, proteins and biological pathways across taxa using bioinformatics and in silico approaches, and implications for predicting susceptibility.
- 3. Species Traits and Functional Diversity.** Understanding how life-history, physiological, morphological and ecological traits shape sensitivity and resilience to chemical stressors.
- 4. Leveraging Existing Toxicity Data.** Using curated databases, interspecies correlation models and statistical approaches (e.g., SSDs) to improve predictions for untested species.

The meeting is planned as a two-day, in-person event and will include plenary sessions introducing each scientific theme, invited and contributed oral presentations, poster sessions highlighting emerging methods and examples, and interactive sessions linking science to regulatory application. The meeting is expected to attract significant and widespread interest across the scientific community. Consistent with SETAC principles, participation will aim for balance across academia, business, government and non-governmental organizations, as well as geographic diversity.

The meeting is set to deliver far-reaching impacts by fostering a shared scientific foundation for species surrogacy, pinpointing best practices and critical knowledge gaps, strengthening the bridge between cutting-edge research and regulatory requirements, and generating influential conference outputs and publications—while also charting the course for future initiatives.

The meeting is being organized by a multi-sector steering committee, with co-chairs Katherine Coady (Bayer CropScience) and Claudia Rivetti (Unilever). Members of the steering committee include John Colbourne (University of Birmingham), Jessica Head (McGill University), Jon Arnot (Arnot Research and Consulting), Michelle Embry (Health and Environmental Science Institute [HESI]), Paul van den Brink (Wageningen University), Mark Johnson (Defense Center for Public Health-Aberdeen, Retired), Rebecca Dalton (Environment and Climate Change Canada [ECCC]) and Luigi Margiotta-Casaluci (Kings College London). The steering committee is working closely with SETAC staff on logistics, fundraising and communications.

Funding is anticipated from a combination of registration fees, business and government contributions, and in-kind support. 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 learning more about the meeting, please contact science@setac.org.