2017–2018 Activities and Accomplishments

Committee leaders:

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HESI manager:

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This scientific program is committed to:

- Ensuring the development of a sound technical basis for alternative test methods as a means to reduce, refine, or replace standard ecotoxicity test procedures around the globe.
- Providing a forum to coordinate the debates and best emerging practices of the alternatives and animal model development sciences to meet existing hazard assessment, effluent assessment, risk assessment, classification and labeling, and other regulatory needs.

Areas of scientific focus:

- Developing alternatives to *in vivo* acute and chronic ecotoxicity tests.
- Examining alternative methodologies for effluent assessment.

Why get involved?

Through your participation in the committee, you are part of an international team of scientists and regulators working toward the effective development of alternative methodologies for environmental risk assessment.

Key accomplishments:

- *Ecotoxicological Threshold of Concern (ecoTTC).* The project on developing an ecoTTC began in 2014, and a manuscript outlining the group's plans was published in early 2015. During 2016 and 2017, a web-based platform for the database and query and analysis tools were developed via a contract with Middle Tennessee State University. A comprehensive user's guide was developed to accompany this database and tool, which will be made freely available in 4Q 2018. A workshop was held in Ottawa on 18–19 September 2017, with support provided by Environment and Climate Change Canada (ECCC), aimed at evaluating the ecoTTC approach and tool using hands-on case examples. Approximately 45 stakeholders attended the workshop. The workshop resulted in several refinements to the database as well as the development of an additional "Chemical Toxicity Distribution" tool. A manuscript summarizing the mode-of-action (MOA) analysis of the ecoTTC dataset was published in 2017 (Kienzler et al. *Environ Sci Technol.* 51:10203–10211), and three additional manuscripts that describe the ecoTTC database, predicted no-effect concentration (PNEC) tool, and distribution tools will be submitted for publication in 3Q 2018. The committee's work was presented at Society of Environmental Toxicology and Chemistry (SETAC) Meetings (North America 2017 and Europe 2018) and was also highlighted at the 2017 HESI Annual Meeting.
- *Effluent Assessment.* An international workshop on "Concepts, Tools, and Strategies for Effluent Testing" was held 1Q 2016, and a manuscript summarizing the conclusions of the workshop was submitted for publication 2Q 2018. The manuscript highlights the need for a toolbox of approaches.

The Committee's focus for May 2018–May 2019:

- *Effluent Assessment.* Follow-up efforts from the workshop will continue, potentially involving the development of a critical review of the state of the science and regulations for effluent assessment, with a focus on animal alternatives and a toolbox approach.
- *ecoTTC.* The group is focused on updating the database and tools, with plans for public release of both in 4Q 2018. Case studies discussed at the 2017 workshop will be evaluated and prepared as examples for how this approach could be used and applied.
- *EDC Reference Chemicals.* Several years ago, a committee subteam drafted a manuscript outline aimed at defining appropriate criteria for endocrine-disrupting chemical (EDC) reference chemicals that could be used in future evaluation and validation of alternative methodologies. Using existing lists as a starting point, these criteria could then be applied to create a reference chemical list for the estrogen, androgen, and thyroid hormone pathways. This work may lead to a research plan to explore the most promising alternative methodologies. There has been recent interest in restarting and completing this work, and a poster on potential next steps and work to date was presented at the 2018 SETAC Europe Meeting.

Recent publications:

Kienzler A, Barron MG, Belanger SE, Beasley A, Embry MR (2017) Mode of action (MOA) assignment classifications for ecotoxicology: an evaluation of approaches. *Environ Sci Technol.* 51(17):10203–10211.

Norberg-King TJ, Embry M, Belanger SE, Braunbeck T, Butler JD, Dorn PB, Farr B, Guiney PD, Hughes S, Jeffries M, Journel R, Leonard M, McMaster M, Oris JT, Ryder K, Segner H, Senac T, Van Der Kraak G, Wilson P, Whale G (2017) An international perspective on the tools and concepts for effluent toxicity assessments in the context of animal alternatives. *Environ Toxicol Chem.* Accepted.

2017–2018 Participating organizations

The Dow Chemical Company
DdZ Ecotox
Environment and Climate Change Canada
European Commission, Joint Research Center
ExxonMobil Biomedical Sciences Inc.
L'Oréal Corporation
Middle Tennessee State University
Procter & Gamble Company
Research Institute for Fragrance Materials
Sanofi
Shell Chemicals, Ltd.
Texas Christian University
UK Home Office
University of Aarhus
University of Bern
University of Guelph
University of Heidelberg
University of Miami, Ohio
US Environmental Protection Agency

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