EVOLUTION OF THE SCIENCE ASSOCIATED WITH UNDERSTANDING AND IDENTIFYING PBTs AND POPs

Geneva - April 25, 2017

SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY

Environmental Quality Through Science®
www.setac.org
Introduction to SETAC

Patrick Guiney
University of Wisconsin-Madison
KEY MESSAGES TODAY

- Evolution in the science of POPs / PBTs
- Stockholm Convention’s flexible framework provides excellent opportunities to benefit from these evolutions in science
- SETAC can help the convention refine their framework to take advantage of new tools and incorporate a customized, enriched approach
SETAC’S MISSION

Promoting Environmental Quality through Science®

Through:

• The study, analysis and resolution of environmental problems
• The management and regulation of natural resources
• Environmental education
• Research and development
1. Multidisciplinary approaches to solving environmental problems
3. Objectivity: Science-based
MISSION STRATEGIES – SCIENCE ADVANCEMENT

- Publications (Books, journals, technical reports, technical issue papers, press releases, meeting proceedings)
- Annual Meetings for Geographic Units
- Premier Pellston Workshops®
- Focus Topic Meetings
- Technical Symposia
- Technical Workshops
- Regulatory Agency Science Briefings
MISSION STRATEGIES – OUTREACH & COLLABORATION

Collaboration with other societies, research entities and intergovernmental agencies on:

- Research
- Education
- Mentoring
- Science Policy
SETAC IN NUMBERS

- 6,000 members
- 95 countries
- 5 geographic units
- 38-year history
- 27 interest groups
- 2 esteemed journals
- 2 Newsletters
SETAC INTEREST GROUPS

A vital forum for collaboration on specific topics

- Animal Alternatives
- **Bioaccumulation Science**
- Chemistry
- Indigenous Knowledge and Values
- **Ecological Risk Assessment**
- Ecosystem Services
- Ecotoxicity of Amphibians & Reptiles
- **Endocrine Disruption Testing and Risk Assessment**
- Environmental Monitoring of Pesticides
- **Exposure Modeling**
- Global Soils
- Life-Cycle Assessment
- **Human Health Risk Assessment**
- Mechanistic Effect Models ERA
- Metals
- Nanotechnology
- OMICS
- Pharmaceuticals
- Plants
- Salinization of Freshwater
- Science and Risk Communication
- **Sediments**
- Soils
- Sustainability
- Wildlife Toxicology
**SETAC JOURNALS**

*Environmental Toxicology and Chemistry (ET&C)*

ET&C publishes papers describing original experimental or theoretical work that significantly advances understanding in the area of environmental toxicology, environmental chemistry, and hazard/risk assessment.

*Integrated Environmental Assessment and Management (IEAM)*

IEAM is devoted to bridging the gap between scientific research and the application of science in environmental decision making, management, and policy and regulation.
SETAC NEWSLETTERS & BOOKS

SETAC Newsletters

- **SETAC Globe and SETAC News**
  - Circulated to more than 10,000 readers
  - Covers SETAC events, science and announcements
- **SETAC Multibrief**
  - News clipping service
  - Showcases research coverage in the news, for better or worse

SETAC Books

- **Environmental Pollution Series**
  - Short books covering topics and chemicals of emerging concerns
  - Seeking authors for this newly launched initiative
SETAC INTERNATIONAL ACTIVITIES

SETAC International Chemical Assessment and Management Symposia

- Barcelona, Spain 2015
- Singapore, 2016
- Salt Lake City, UT 2016
- Santos San Paulo, Brazil, 2017
SETAC COLLABORATION WITH UNE – DIVISION OF ECONOMICS, SUSTAINABLE CONSUMPTION AND PRODUCTION

UNE/SETAC Life Cycle Initiative (LCI): 15 year partnership in life cycle thinking (LCT) and life cycle assessment (LCA)

– Methods and Tools Development
  • Cutting-edge technical workshops
  • Publications

– Capacity Building
  • Training activities
  • Technical helpdesk
SETAC engaged with WHO/SAICM to support training/capacity building for chemicals management in developing countries.

SETAC members serve on Chemical Branch Advisory Panels, most recently for endocrine disrupting substances.

SETAC collaboration with UNE Mercury Partnership since 2011.
SETAC COLLABORATIONS WITH UNE - GLOBAL ENVIRONMENT FACILITY (GEF) / SCIENTIFIC & TECHNICAL ADVISORY PANEL

- Emerging Chemical Management:
  Issues spanning: import, transport, handling, and toxicology of chemicals with a focus on developing countries and economies in transition

- Central Mercury Knowledge Platform - UNEPPLive
MAKING SCIENCE MATTER FOR U.S. CONGRESS

• An example of SETAC North America’s strategy for public outreach and education

• Presented a 5.5 hour risk assessment seminar, several round table discussions on:
  – risk and high throughput screening
  – use of QSARs, use of WoE, and PBT screening methods
WHAT SETAC DID TO HELP U.S. CONGRESS CREATE BETTER SCIENCE-BASED REGULATION

• Helped them understand the importance between hazard and risk assessment.

• Helped them appreciate how TSCA Reform could be updated to allow for the incorporation of risk-based regulation of chemicals.

• Helped them understand the importance of using a Weight-of-Evidence approach to reach conclusions about how to regulate chemicals.

• Improved scientific approach to regulating PBTs/ POPs.
SETAC PELLSTON WORKSHOPS

- Focus on crucial environmental topics.
- Bring together up to 50 invited experts with a focus on multi-sector balance and unique scientific expertise.
- Continue a renowned tradition of published proceedings.
- A Trade-Marked process.
Science-Based Guidance and Framework for the Evaluation and Identification of PBTs and POPs: Summary of a SETAC Pellston Workshop

Edited by
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The Dow Chemical Company

D.C.G. Muir
Environment Canada

Summary of the SETAC Pellston Workshop on Science-Based Guidance and Framework for the Evaluation and Identification of PBTs and POPs, 28 January–1 February 2008, Pensacola, Florida USA

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Special Series: Science-Based Guidance and Framework for the Evaluation and Identification of PBTs and POPs

**Introduction to Special Series: Science-Based Guidance and Framework for the Evaluation and Identification of PBTs and POPs (pages 535–538)**
Gary M Klečka, Derek CG Muir, Peter Dohmen, Steve J Eisenreich, Frank APC Gobas, Kevin C Jones, Donald Mackay, José V Tarazona and Dolf van Wijk

Robert Boethling, Kathrin Fenner, P Howard, Gary Klečka, Torben Madsen, Jason R Snape and Mick J Whelan

**Multimedia Partitioning, Overall Persistence, and Long-Range Transport Potential in the Context of POPs and PBT Chemical Assessments (pages 557–576)**
Martin Scheringer, Kevin C Jones, Michael Matthies, Staci Simonich and Dik van de Meent

**Bioaccumulation Assessment Using Predictive Approaches (pages 577–597)**
John W Nichols, Mark Bonnell, Sacho D Dimitrov, Beate I Escher, Xing Han and Nynke I Kramer

**Evaluation of Bioaccumulation Using In Vivo Laboratory and Field Studies (pages 598–623)**
Annie V Weisbrod, Kent B Woodburn, Albert A Koelmans, Thomas F Parkerton, Anne E McElroy and Katrine Borgå

**Revisiting Bioaccumulation Criteria for POPs and PBT Assessments (pages 624–637)**
Frank APC Gobas, Watze de Wolf, Lawrence P Burkhard, Eric Verbruggen and Kathleen Plotzke

**Use of Measurement Data in Evaluating Exposure of Humans and Wildlife to POPs/PBTs (pages 638–661)**
Deborah L Swackhammer, Larry L Needham, David E Powell and Derek CG Muir

**Modeling Exposure to Persistent Chemicals in Hazard and Risk Assessment (pages 662–679)**
Christina E Cowan-Ellsberry, Michael S McLachlan, Jon A Arnot, Matthew MacLeod, Thomas E McKone and Frank Wania

**Use of (Eco)toxicity data as screening criteria for the identification and classification of PBT/POP compounds (pages 680–696)**
Keith R Solomon, Peter Dohmen, Anne Fairbrother, Marcelle Marchand and Lynn McCarty

**Integrated Approach to PBT and POP Prioritization and Risk Assessment (pages 697–711)**
Dolf van Wijk, Robert Chénier, Tala Henry, Maria D Hernando and Christoph Schulte
• Risk Assessment of POPs/PBTs needs to include higher tiered evaluations and refinements.

• Existing Stockholm Convention POPs assessment based on “whether the chemical is likely as a result of its long-range environmental transport, to lead significant adverse human health and/or environmental effects such that global action is warranted”.

• This existing framework provides adequate flexibility to introduce additional new and emerging scientific evidence into the process.
For screening and priority setting, reliance on QSARs is inevitable and appropriate as long as the domain of applicability (boundary conditions) are understood.

Use of empirically-derived and modelled data on analogous chemicals and weight-of-evidence approaches are recommended for assessment.

Measurements of half-live ranges should be made in appropriate environmental media using improved biodegradation tests under environmentally relevant experimental conditions.

Use PBPK modelling in appropriate species to support conclusions on uptake and bioaccumulation potential.
WHAT SETAC CAN OFFER THE STOCKHOLM CONVENTION?

• Promote the application of interdisciplinary environmental sciences in the management of POPs/PBTs;
• Participate in the interpretation and communication of the best available science in the management of potential risks associated with POPs/PBTs;
• Provide a forum for communication and interaction among environmental professionals on a multisector, interdisciplinary, and multinational basis;
• Offer nonpartisan scientific guidance, not advocacy. Scientific expertise through whatever form and context the UN SC judge to be most efficient and effective (e.g., briefings to staff, letters, one-on-one meetings, and expert testimony);
• Assist with a customized framework of enhanced tools for dealing with POPs and PBTs