AG/Committee Name: Global Advisory Group for Bioaccumulation Assessments ('B' SAG)
Submitted by: Henriette Selck, Michelle Embry, Mark Lampi
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Council/Board Liaison: David R Ownby
Staff liaison: Bruce Vignon
Technical Committe liaison: Katherine von Stackelberg

Organization

The purpose of the Global SETAC Advisory Group on Bioaccumulation Assessments ('B' SAG) is to advance the state of bioaccumulation science, and increase the use of sound science in decision-making through the use of models, *in vitro*, and *in vivo* data for bench-scale, site-specific and regional bioaccumulation assessments. For more information see http://www.setac.org/node/361.

Activities Summary

Update on the output from SETAC-HESI-EPA "Lab-Field Bioaccumulation Workshop" in New Orleans 2009.

The workshop focused on why lab experiments (especially BCF) do not translate easily, or not at all, to field data (see also description in the 2010 report). This topic was addressed from three angles: 1) Comparing laboratory and field measured bioaccumulation endpoints: fugacity approach; Comparison of lab and field BSAFs: biases and variability; 2) Explaining variability of bioaccumulation measurements (BCF, BAF, BSAF, BMF) in laboratory and field studies; 3) Trophic magnification factors: Impact of ecology, ecosystem, and study design; Trophic magnification factors in regulatory context.

Output: 5 papers and an overall introduction were submitted to IEAM in Dec 2010. All are available on line:

1. *Introduction to Special Series: Bioaccumulation data from laboratory and field studies: Are they comparable?* LP. Burkhard, C Cowan-Ellsberry, MR. Embry, RA. Hoke, KA. Kidd. DOI: 10.1002/ieam.196
2. *Comparing laboratory and field measured bioaccumulation endpoints.* LP Burkhard, JA Arnot, MR Embry, KJ Farley, RA Hoke, M Kitano, HA Leslie, GR Lotufo, TF Parkerton, KG Sappington, GT Tomy, KB Woodburn. DOI: 10.1002/ieam.260
3. *Comparing laboratory- and field-measured biota–sediment accumulation factors*. LP Burkhard, JA Arnot, MR Embry, KJ Farley, RA Hoke, M Kitano, HA Leslie, GR Lotufo, TF Parkerton, KG Sappington, GT Tomy, KB Woodburn. DOI: 10.1002/ieam.218
4. *Explaining differences between bioaccumulation measurements in laboratory and field data through use of a probabilistic modeling approach*. H Selck, K Drouillard, K Eisenreich, AA Koelmans, A Palmqvist, A Ruus, D Salvito, I Schultz, R Stewart, A Weisbrod, NW van den Brink, M van den Heuvel-Greve. DOI: 10.1002/ieam.217
5. *Trophic magnification factors: Considerations of ecology, ecosystems, and study design*. K Borgå, KA Kidd, DCG Muir, O Berglund, JM Conder, FAPC Gobas, J Kucklick, O Malm, DE Powell. DOI: 10.1002/ieam.244
6. *Use of trophic magnification factors and related measures to characterize bioaccumulation potential of chemicals*. JM Conder, FAPC Gobas, K Borgå, DCG Muir, DE Powell. DOI: 10.1002/ieam.216

Report on the workshop on "Moving bioaccumulation assessments to the next level: progress made and challenges ahead" February 8 – 10, 2011 in Washington DC with participation of B-SAG members. The workshop was organized by HESI Bioaccumulation Project Committee.

- Full workshop report is available on the HESI website (www/hesiglobal.org) on the

Bioaccumulation Project Committee Page

- An international, tripartite project steering team was formed in Spring 2011, tasked with prioritizing and implementing recommendations from the February workshop.
- Current HESI committee focus areas include the following:
  - *In vitro:*
    - Currently funding a small collaborative research project to examine the utility of cryopreserved primary hepatocytes to estimate biotransformation rates (collaboration between USEPA, DuPont, and University of Bern)
    - A small sub-group will be formed to explore additional areas of focus, including follow-up to the S9 metabolism work as well as bioavailability models (including but not limited to the gut cell line work).
  - TMF: Following-up on the discussions that occurred at the 2009 Lab-Field workshop, a small sub-team has been formed to identify key issues in this area and determine the appropriate next steps.
  - *In vivo:* A small expert meeting will be held in conjunction with the SETAC meeting in Berlin to discuss new *in vivo* developments, data, and methods. This will include but is not limited to the shortened *in vivo* method as well as the results from the dietary ring trial.
  - Dietary efficiency modeling: The committee is planning to fund a project to update laboratory BCF and BMF databases for fish and calibration/verification of improved mechanistic models for bioaccumulation assessment.
  - Terrestrial bioaccumulation: The HESI group is working to form a workshop scoping team. Holding a workshop on terrestrial bioaccumulation was a major conclusion from the February 2011 workshop.

  For additional details on the committee, contact Michelle Embry (membry@ilsi.org) or James Kim (jkim@ilsi.org)

SETAC Milan: BSAG organized a session on 'Laboratory and field measurements and alternative approaches in bioaccumulation'. The session summary was published in SETAC Globe, volume 12 (6).

SETAC Boston: BSAG has organized a special symposium. The focus of this special session in on 'Bioaccumulation – lessons learned and challenges ahead', and is chaired by H Selck, M Embry and M Lampi. The aim of the session is to disseminate the current status of different aspects of B, including both aquatic and terrestrial systems, and to highlight future challenges and research needs.

Future Plans

- ***SETAC Berlin:***
  - BSAG has organized a session on 'Bioaccumulation - impact of environmental, biological and ecological variation' chairs: H Selck and M Nendza.
  - Animal Alternatives Advisory Group is planning on holding an evening panel discussion on the regulatory acceptance / future of alternative methods. Additional information will be distributed to the BSAG once it is available.

- ***White paper on B focus areas:***
  - Bioaccumulation in the terrestrial environment
  - application of TMFs in terrestrial ecosystems

- studies on the influence of ecosystem characteristics on TMF
- Comparative studies between laboratory and field
  - Paired laboratory and field measurements
  - co-located organism and sediment samples
  - Lab test with sediment using the same, or taxonomically-related organisms.
- Studies on actual bioavailable chemical conc in food items
  - BC in natural sediments & effect of different sed components (BC, LOM etc) for chemical AE in different organisms
- Improve data for parameterization and confidence in model output (validation issue)
- Widening the suite of chemicals measured (hydrophobic, hydrophillic, metals, etc)

- ***Proposal for short course*** on how to use fish liver/ and hepatocytes to determine metabolism of chemicals. Karla Johanning, Helmut Segner, Heike Laue.

Business and Planning Meetings

Detailed minutes of the meetings are posted on the Communities web. Find below an excerpt:

A business meeting was held at the Annual SETAC Europe Meeting in Milan on Tuesday 17 May 2011

Key discussion points:

- Update on the workshop **Moving bioaccumulation assessments to the next level: progress made and challenges ahead (M Embry)**
- Session proposals for SETAC Boston were discussed. H Selck: proposed to apply for a special session at SETAC Boston. The session should be based on the SETAC sessions we have had during the last couple of years (lab-field bioaccumulation & in vitro in vivo) aiming at inviting speakers that cover these areas well and can give an overview of where we are and what is needed.
- Several B-SAG members are involved in the initiative to revise the OECD 305 Guideline.
- Person 'name' liaison…
- It was agreed to submit a proposal for at least one BSAG session.

Membership Communications

- ***SAG communities webpage to***
  - link/post new articles and grey literature related to advances in bioaccumulation assessment, posters from SETAC, SOT, and other professional meetings relating to ongoing work on development of B approaches
  - provide basic information for educators on bioaccumulation terms, tests, regulations
- The Communities website has only a small number of visits and downloads. Since e-mails were ceased to the membership, we have to find a better way to keep people informed.

B-SAG Steering Committee (2011)

Academia:

Henriette Selck (Co-Chair, Roskilde University)
Beate Escher (University of Queensland, Australia)
Frank Gobas (Simon Fraser University, Canada)
Dayanthi Nugegoda (RMIT University, Australia)
Heather Leslie (IVM, VU University, The Netherlands)

Business:
Mark Lampi (Co-Chair, Exxon Mobil, USA)
Dan Salvito (RIFM, USA)
Michelle Embry (ILSI-HESI, USA)
Marc Leonard (L'Oreal, France)

Government:
Derek Muir (Environment Canada)
Theo Traas (RIVM, The Netherlands)
Marlies Halder (ECVAM, Italy)
Larry Burkhard (USEPA)
Mark Bonnell (Environment Canada)

The chairs will rotate off end of 2013.