Regional Sediment Evaluation Team (RSET)

Biological Testing Subcommittee Update

Annual Meeting
September 18, 2007
Boise, Idaho

Biological Testing Subcommittee

- **BTS Subcommittee Focus on Fresh Water Testing Issues in 2007**
- **Membership in BTS**
- **Still Open for Additional Volunteer Members**

Structure and Process

- **Conference calls –** Monthly conference calls for members to discuss BTS task items
- **Review of Minutes** – Members unable to participate in call can still provide input via review and comment on conference call minutes
- **RSET White Papers** – Process for memorializing BTS decisions and consensus to RSET Policy Committee

Freshwater Interpretive Criteria

- **Goals/Objectives –** Review and reach consensus on biological testing interpretive criteria for 10-day and longer term FW sediment Bioassays
- **Which Tests Were Evaluated?**
  - *Hyalella azteca* 10-day mortality test
  - *Hyalella azteca* 28-day growth and mortality test
  - *Chironomus tentans* 10-day growth and mortality test
  - *Chironomus tentans* 20-day growth and mortality test
  - Microtox

Freshwater Interpretive Criteria

- **Which Criteria Were Reviewed:**
  - QA Control Performance Criteria
  - QA Reference Performance Criteria
  - Screening Level 1 Criteria
  - Screening Level 2 Criteria

Freshwater Interpretive Criteria

- **Recommendations –** Biological interpretive criteria in September 2006 SEF are appropriate for use
- **Path Forward –** Finalize RSET White Paper to memorialize recommendation

Longer Term FW Toxicity Tests

- **Issue –** SEF recommendations for use of
  - *Hyalella azteca* 28-day Mortality and Growth Test
  - *Chironomus tentans* 20-day Mortality and Growth Test
- **Coordinating with Reliability Assessment Being Conducted as Part of FW Guidelines Tasks**

Marine/Estuarine Interpretive Criteria

- **Review of Current Washington State SMS Criteria and PSDDA Criteria**
- **BTS Supports Revisions to Make Criteria More Consistent Between Clean-up and Dredging Programs as Identified in Gries, 2005 DMMP/SMS Clarification Paper**

Reference Area Selection Process

- **Goals/Objectives** – Review and recommend process for selection of sediment reference areas for biological testing assessments
- **For Watersheds that do not have Identified Sediment Reference Areas**
- **Compile list of reference areas currently in use for appendix to SEF**

Reference Area Selection Process

- **BTS Recommends a Phased Approach**
- **Phase I Reconnaissance:**
  - ID potential reference sediment locations
    - Away from know sources of potential contamination
    - Stable sediments
  - Limited analytical testing
  - Grain size analysis

Reference Area Selection Process

- **Select Subset of Phase I Areas for Subsequent Additional Testing Using Decision Matrix**
- **Phase II Analytical and Biological Testing:**
  - Full chemical analyte testing
  - Sediment toxicity testing
  - Bioaccumulation testing
- **Select Final Reference Areas Based on Phase II Testing Results**

Evaluation of *Corbicula* for FW Bioaccumulation Testing

- **Goals/Objectives –** Evaluate the potential use of bivalve *Corbicula fluminea* as a second freshwater laboratory bioaccumulation test species
- **Background:** Current test organism has limited tissue biomass to run complete analytical testing for more than a limited set of bioaccumulative compounds
- **Process:** BTS reviewing regional datasets that have concurrent bioaccumulation testing with *Corbicula* and *Lumbriculus*

Evaluation of *Corbicula* for FW Bioaccumulation Testing

- **Current Status of Evaluation:**
  - *Corbicula* is responding differently to bioaccumulative compounds than *Lumbriculus*
  - *Corbicula* has different feeding strategy than *Lumbriculus*
  - Inconsistent uptake of metals by *Corbicula*
  - Time to steady-state question

Evaluation of *Corbicula* for FW Bioaccumulation Testing

- **Path Forward and Additional Issues:**
  - Continue evaluation of regional datasets
  - Review literature for questions arising from regional data set evaluation
  - Potential for body burden peak with subsequent decline in tissue residue for some PAHs
  - 45-Day bioaccumulation testing requirement by PSDDA
  - Prepare RSET White Paper with recommendations

Sediment Toxicity Testing Toolbox

- **Next Task for BTS**
- **Goal/Objectives:**
  - Compile an appendix of testing protocols other than the SEF recommended suite of bioassays. Serve as "tool box" to apply in specific situations and projects
  - Assist in technical or regulatory decision making
  - Presented in Appendix to SEF

BTS Next Steps

- **Continue Working Issues Via Conference Calls and Review of Minutes**
- **Prepare RSET White Papers on Topics Discussed Today**
- **Recommend Text Revisions to 2006 SEF**

Upcoming Topics for BTS

- **Evaluate Protectiveness of Current Suite of Bioassays for ESA Species**
- **Evaluate Ecological Relevance of Sublethal Endpoints and Biomarkers**
- **Evaluate Significance of Photo-activation with Respect to Sediment Bioassay Protocols**

QUESTIONS ?