

Technical Review Workgroup (TRW) - Bioavailability Committee (BAC) 2022

Accomplishments

The TRW's Bioavailability Committee develops new guidance concerning human health risk assessment at hazardous waste sites. The Bioavailability Committee will also provide site consultation in support of regional requests and identify research needs to address data gaps relevant to contaminant bioavailability in soil site assessment activities.

Technical Support

One of the fundamental roles and responsibilities of the BAC is to provide technical support to state, federal, tribal, non-governmental and international groups regarding the assessment of relative bioavailability (RBA) and its application to human health risk assessment. Furthermore, the BAC promotes the application of best use of available scientific information concerning RBA and human health risk assessment methods in soil and soil-like (e.g., floodplains) media at affected sites.

The BAC members are technically diverse, experienced and highly trained professionals in chemistry, toxicology, and human health risk assessment, and provided expert assistance in complex risk assessment scenarios.

The TRW Bioavailability Committee responded to requests for assistance in 2022 from the Nevada Department of Environmental Protection, Texas Commission on Environmental Quality, and a toxicologist at Hamp Mathews and Associates. Requests were for the following information:

1. How to convert a laboratory reported arsenic IVBA to the corresponding RBA percent and how to apply that resulting RBA to an action level for bioavailability using site-specific RBA estimates
2. Definitions of arsenic absolute and relative bioavailability
3. Use of amendments to reduce bioavailability of arsenic in soil
4. Application metal bioavailability sampling planning tool for assessment offsite-specific soil arsenic bioavailability
5. Site-wide RBA for soil arsenic

Methods and Tools Development

The BAC has developed the Bioavailability Sampling Planning Tool (BSPT) to support the updated RBA sampling guidance, which emphasizes the importance of Data Quality Objectives in designing and evaluating sampling plans. The BSPT is a simulation model implemented in R that allows risk assessors and risk managers to estimate numbers of soil samples needed to achieve clean-up decision errors established in sampling Data Quality Objectives. The BSPT accounts for expected variance in soil concentration and RBA and analytical error in measurement of concentration and IVBA. The BSPT can be used to evaluate discrete sampling and incremental composited sampling designs.

The BAC is also in the process of updating Method 1340 in the SW846 Compendium. This update will formally add arsenic to the method, as well as provide updated concentrations for new standards.

Communication, Training, and Outreach

The BAC has developed two fact sheets for the public that provide an overview of measurement and application of lead and arsenic relative bioavailability, respectively. These fact sheets will help risk

assessors, risk managers, and community involvement coordinators discuss bioavailability of these contaminants.

The BAC also provided review and comment on bioavailability sections of the Residential Lead Sites Handbook and is developing a technical training on sampling, analysis, and application of bioavailability data for risk assessors.

Technical Review Workgroup Bioavailability Committee Members:

Region 1

Courtney Carrol

Region 2

Julie McPherson

Region 4

Shanna Alexander

Region 5

Keith Fusinski

Region 6

Ghassan Khoury

Region 7

Ann Jacobs

Region 8

Sydney Chan (Co-chair)

Charles Partridge

Region 10

Katie Adams

Marc Stifelman

ORD

Aaron Betts

Karen Bradham (co-chair)

Todd Luxton

Mathew Noerpel

Kirk Scheckel

Tyler Sowers

OSRTI

Michele Burgess

Matt Lambert (co-chair)

OEM

April Luke

NEIC

Brad Miller