Interpreting Human Biomonitoring in a Health Risk Context:
Creating Chemical-Specific Biomonitoring Equivalents (BEs)
and Related Communication Materials

Biomonitoring studies (including the CDC’s biannual National Report on Human Exposure to Environmental Chemicals) provoke strong responses from the press, regulators, scientists, and physicians and poses unique challenges for product stewardship.

Do the measured levels pose a health risk? Are the measured levels safe?

Biomonitoring Equivalents (BE) were developed as part of a collaboration between Summit Toxicology, US EPA, Health Canada and multiple industry trade groups to help address these questions.

A BE is defined as blood or urine concentrations of a chemical that are consistent with a tolerable exposure reference value (e.g., a USEPA Reference Dose or ATSDR Minimal Risk Level or Acceptable Daily Intake).

A chemical-specific BE can be derived for many chemicals using existing PK information. The BE derivation process includes:
- Compiling existing tolerable exposure reference values;
- Compiling and reviewing existing pharmacokinetic information;
- Reviewing information on the MOA;
- Assessing available biomarkers for specificity and relevance;
- Deriving BE values for the point of departure and the exposure reference value (BEPOD, BE);
- Independent peer-review of the BE;
- Publishing the BE dossier in the peer-reviewed literature;
- Development of chemical-specific communications materials, including website materials www.biomonitoringequivalents.net

Example: Using the 2,4-D Biomonitoring Equivalent to place human biomonitoring data into a risk context (2,4-D in urine from CDC’s 3rd National Exposure Report)

For copies of the Regulatory Toxicology and Pharmacology BE Supplemental Issue, or for more information on the BE concept, please contact Sean Hays at (303) 747-0722, shays@summittoxicology.com or visit www.biomonitoringequivalents.net