5 Methodology for Evaluating Contaminant Oral Bioavailability

Many studies, using a variety of approaches, estimate the relative oral bioavailability of various contaminants from soil. Each of these approaches has a rational basis, but all have limitations — assumptions (often undisclosed) that may or may not be satisfied, caveats, and experimental compromises made for practical reasons. These limitations affect the accuracy and reliability of the results and should be considered when deciding whether a given bioavailability study meets the needs of a risk assessment. Publication of bioavailability data in a study or even in a peer reviewed journal does not necessarily mean that data are high quality or suitable for risk assessment purposes at a given site.

The following sections offer insights for critically evaluating the quality of bioavailability study data that might be incorporated into a human health risk assessment. Both bioavailability study design and data interpretation are addressed, as well as the strengths and weaknesses of different approaches. Determining in vivo bioavailability and predicting bioavailability from in vitro bioaccessibility methods are also explained.