9 Using Bioavailability Information in Risk Assessment

Accounting for **bioavailability** in a **human health risk assessment** (HHRA) is compatible with, and is already reflected within, some existing HHRA methodologies. This approach more accurately estimates site-specific risks, as opposed to assuming that a given chemical present in the soil is 100% bioavailable to humans.

Accounting for site-specific bioavailability is a critical aspect in calculating potential risk to humans that live, work, or play near a given contaminated site. A **site-specific bioavailability assessment** ensures that a more accurate HHRA is produced with less uncertainty. This reduction in uncertainty allows for more effective remedial decision making, potentially freeing up resources and reducing unnecessary action, without compromising protection of human health.

This section describes how bioavailability can be used in risk calculations, to modify estimated exposures or assumed toxicity values, or generate cleanup objectives. Problems and potential solutions to the inevitable variability in relative oral bioavailability (RBA) estimates are presented. Finally, this section discusses how to communicate risk estimates when site-specific RBA is used.

▼*Read more*

Site-specific bioavailability can be considered at various stages of an environmental project (see Decision Process). Several factors should be considered when deciding whether site-specific bioavailability testing should be conducted, including:

- the relative contribution of the soil ingestion pathway to risk (as compared to other exposure routes)
- the extent to which the risk management goals accepted by the jurisdictional agency are exceeded
- the potential for regulatory acceptance of site-specific RBA
- the cost associated with performing a bioavailability assessment (as compared to the cost of remedial action)
- whether a validated bioavailability method for the chemical is available

The decision process chapter presents an iterative process to support decisions to determine whether a site-specific bioavailability assessment is applicable or feasible at a given site. The USEPA decision framework for determining the usefulness of site-specific RBA values indicates that analyses, cost, and added value are key factors to consider when using site-specific RBA values in the HHRA (USEPA 2007c).

For more information about HHRA, see *Decision Making at Contaminated Sites: Issues and Options in Human Health Risk Assessment* (RISK-3) (ITRC 2015). Chapter 2 of the RISK-3 document includes information about the use of HHRA in site cleanup. The document also includes links to USEPA and state agency guidance on HHRA.