

## Risk Assessment

Releases of contaminants to the environment pose a risk to human health and ecological habitats. A baseline risk assessment provides an evaluation of the potential threat to human health and the environment. It can also provide the basis for determining whether or not remedial action is necessary, and justification for specific actions.

Human health risk assessments consider the adverse impact of a contaminant through inhalation, ingestion, adsorption, or other human contact; whereas, ecological risk assessments consider the adverse impact of a contaminant on the habitat as well as the sensitive species within that habitat.

A risk assessment considers four components: hazard identification (i.e. the sources), pathway evaluation, dose-response analysis, and exposure quantification.

The toxicity, nature, extent, and magnitude of the hazard in various media (e.g. soil, vapor, groundwater) are characterized through an investigation program. The potential human and environmental receptors are also identified and characterized. The transport pathways are evaluated through fate and transport analysis to determine the duration and concentration of the contaminant that can arrive at the receptor. Once at the receptor, the routes of exposure (e.g. ingestion) are considered along with the exposure concentration and duration to determine the dose. The acute and chronic toxicological effects are then evaluated. Lastly, the levels of uncertainty associated with the data and analysis are considered.

**Aquilologic** staff has collaborated with toxicologists and biologists in conducting human health and ecological risk assessments. We conduct the source and pathway analysis, while the toxicologists and biologists focus on receptor exposure evaluation.