

Abstract

The NRC report *Science and Decisions: Advancing Risk Assessment* made several recommendations to improve chemical risk assessment, with a focus on in-depth chronic dose-response assessments conducted by the U.S. Environmental Protection Agency. The recommendations addressed two broad elements: improving technical analysis and utility for decision making. To advance the discussions in the NRC report, in three multi-stakeholder workshops organized by the Alliance for Risk Assessment, available and evolving risk assessment methodologies were considered through the development and application of case studies. A key product was a framework (<http://www.allianceforrisk.org/Workshop/Framework/ProblemFormulation.html>) to guide risk assessors and managers to various dose-response assessment methods relevant to a range of decision contexts ranging from priority setting to full assessment, as illustrated by case studies. It is designed to facilitate selection of appropriate methodology for a variety of problem formulations and includes a variety of methods with supporting case studies, for areas flagged specifically by the NRC committee for consideration--e.g., susceptible sub-populations, population variability and background. The framework contributes to organization and communication about methodologies for incorporating increasingly biologically informed and chemical specific knowledge into dose-response analysis, which is considered critical in evolving fit-for-purpose assessment to address relevant problem formulations.