

<http://www.epa.gov/raf/publications/guiding-monte-carlo-analysis.htm>

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Office of the Science Advisor (OSA)

You are here: [EPA Home](#) | [Office of the Science Advisor](#) | [Risk Assessment Forum](#) | [Guiding Principles for Monte Carlo Analysis](#)

Guiding Principles for Monte Carlo Analysis

The importance of adequately characterizing variability and uncertainty in fate, transport, exposure, and dose-response assessments for human health and ecological risk assessments has been emphasized in several U.S. Environmental Protection Agency (EPA) documents and activities. As a follow up to these activities, EPA is issued a Policy for Use of Probabilistic Analysis in Risk Assessment and preliminary guidance on using probabilistic analysis. The policy documents the EPA's position "that such probabilistic analysis techniques as Monte Carlo analysis, given adequate supporting data and credible assumptions, can be viable statistical tools for analyzing variability and uncertainty in risk assessments." The policy also establishes conditions that are to be satisfied by risk assessments that use probabilistic techniques. These conditions are in keeping with the Agency's risk characterization policy that requires clarity, consistency, transparency, and reproducibility in risk assessments.

"Guiding Principles for Monte Carlo Analysis" (EPA/630/R-97/001) presents a general framework and broad set of principles important for ensuring good scientific practices. Many of the principles apply generally to the various techniques for conducting quantitative analyses of variability and uncertainty; however, the focus of the principles is on Monte Carlo analysis. EPA recognizes that quantitative risk assessment methods and quantitative variability and uncertainty analysis are undergoing rapid development. The guiding principles are intended to serve as a minimum set of principles and are not intended to constrain or prevent the use of new or innovative improvements where scientifically defensible.

Downloads/Related Links

- [Policy for Use of Probabilistic Analysis in Risk Assessment \(PDF\)](#) (4 pp, 24KB, [about PDF](#))
- [Guiding Principles for Monte Carlo Analysis \(PDF\)](#) (39 pp, 169KB, [about PDF](#))

Related Link(s)

- [Report of the Workshop on Selecting Input Distributions for Probabilistic Assessments](#)
- [Summary Report for the Workshop on Monte Carlo Analysis](#)

Citation

U.S. EPA. Guiding Principles for Monte Carlo Analysis. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC, EPA/630/R-97/001, 1997.

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- [RAF Home](#)
- [About the Forum](#)
- [What's New](#)
- [Public Meetings](#)

- **Publications**
 - [Year](#)
 - [Alphabetical](#)
 - [Human Health](#)
 - [Ecological](#)
 - [External Review Drafts](#)
 - [Workshop Reports](#)