

**Statistical Methods for Benchmark Analysis
in Environmental Risk Assessment**

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ABSTRACT: Statistical models and methods are discussed for quantifying the risk associated with exposure to environmental hazards. Attention is directed at problems in dose-response modeling when low-dose risk estimation is a primary goal. Most common is the problem of estimating excess risk when data are in the form of proportions. Under this paradigm, excess risk measures are discussed which are used to construct benchmark doses" (BMDs); these BMDs represent the exposure/dose levels at which specified excess risk benchmarks are achieved. Simultaneous confidence bands are derived for making inferences on the excess risk. These are then inverted in order to construct confidence limits on the BMDs.