



SAB Review of Expert Elicitation Task Force White Paper - Overview

Kevin Teichman

Office of Research and Development
Office of Air and Radiation

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Why the increased interest in Expert Elicitation (EE) at EPA?

- Scientifically robust environmental risk assessments are not simply the multiplication of a single exposure value by a single toxicity value.
- Probabilistic risk assessments often use Monte Carlo techniques to analyze distributions of both exposures and effects to estimate risks.
- Frequently assessors must account for both missing data (e.g., limited exposure data) and scientific uncertainties (e.g., dose-response data in a different species or at exposures levels above the range of environmental exposures).
 - To account for this missing information, assessors often rely on defaults for missing data and compound uncertainty factors.
 - Often there are important uncertainties (e.g., differences among study designs) that can't be characterized based on the available data.
- Expert elicitation is one approach to “fill in” data gaps and/or provide improved characterization of uncertainty to better inform environmental decisions.

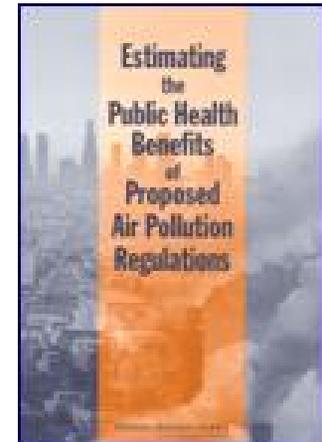


OMB (2003) *Circular A-4*

p. 41: "In formal probabilistic assessments, **expert solicitation** is a useful way to fill key gaps in your ability to assess **uncertainty**. In general, experts can be used to quantify the probability distributions of key parameters and relationships. These solicitations, combined with other sources of data, can be combined in **Monte Carlo simulations** to derive a probability distribution of **benefits and costs**."



Estimating the Public Health Benefits of Proposed Air Pollution Regulations (NAS 2002)



p. 134: "The committee agrees with EPA's statement that it would **require expert judgment to specify probability distributions** for many of the uncertain components of the health benefits analyses. ... EPA is correct that the elicitation of expert opinions in the form of probability distributions is a **difficult and uncertain process**. ... however ... these difficulties are (not) sufficient reasons for not trying to obtain such advice. ... As difficult and uncertain as these specifications are, they are **preferable to EPA's current practice** of treating important and highly uncertain model components as though they were certain."



EPA Cancer Risk Guidelines (2005)

- “In many of these scientific and engineering disciplines, researchers have used rigorous expert elicitation methods to overcome the lack of peer-reviewed methods and data.”
- “These cancer guidelines are **flexible enough to accommodate the use of expert elicitation to characterize cancer risks**, as a complement to the methods presented in the cancer guidelines.”



Is Expert Elicitation the Same as Expert Judgment?

- Expert judgment is inherent in the scientific process and covers a range of activities
 - Analysis – problem formulation, choices among studies and models, efforts to fill in data gaps, estimations of uncertainty
 - Evaluation and interpretation of results
- Expert peer review draws upon the expert judgments of others to provide feedback on planned or completed products and projects
- Expert Elicitation (EE) offers a formal, systematic, and transparent process for obtaining and quantifying expert judgment



Why the need for an Intra-Agency Task Force?

- While EPA acknowledges the potential value of this method:
 - Most EPA analysts/decision makers unfamiliar with method
 - No clear guidelines on how to conduct within EPA (or elsewhere)
 - Desire to promote consistency
 - Broad range of statutory, regulatory, policy issues to be addressed
 - Consider the potential impacts of precedents from near-term projects utilizing EE
 - Need to promote technically defensible assessments



Expert Elicitation Task Force Formation and Charge

- April 2005: SPC approves formation of an Agency-wide Task Force to develop a white paper on Expert Elicitation.
- Charge:
 - To initiate a dialogue within the Agency about the conduct (e.g., selection of experts) and use of expert elicitation
 - To facilitate future development and appropriate use of expert elicitation methods.
- Broad representation across Program Offices, ORD, and Regions
- SPC Champions: Bill Farland (ORD) and Rob Brenner (OAR)