

## Comments on the OMB Risk Assessment Bulletin

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15 June 2006

Increasing the number and scope of applications for risk assessment requires developing standards that will facilitate risk assessment execution and evaluation. OMB's Risk Bulletin is clearly an important document that provides a set of standards that will be useful to government agencies as well as to risk assessors in general. However, the standards set in the Bulletin are high, especially for influential risk assessments. Achieving these standards may be problematic, particularly for emerging threats (such as nanomaterials, military-specific compounds, etc.). The Bulletin acknowledges the possibility that standards might not be met and often allows compliance "to the extent appropriate...." Nevertheless, the OMB Bulletin does not discuss what extent is appropriate or how decisions should be made about the appropriateness of different analytical approaches in different situations. Similarly, the Bulletin often places relevance on weight-of-evidence (WOE) evaluation, but WOE, as it is currently practiced, is basically a descriptive discussion of individual lines of evidence and thus may not comply with OMB's requirements.

To meet the challenge of conducting risk assessment in situations with a limited knowledge-base, and high uncertainty and variability, we and others (see, for example, Linkov et al., 2004; Kiker et al., 2005; Linkov et al., 2006c) advocate coupling traditional risk assessment with multi-criteria decision analysis (MCDA). MCDA is a robust discipline with a developed set of tools that are quite useful for the issues discussed in the OMB Bulletin, and for risk assessment applications in general. Specifically, MCDA tools are useful in illustrating and justifying decisions at the analytical depth and appropriateness of advanced risk assessment tools (such as probabilistic risk assessment) required for implementing individual projects. Multiple publications are available on the use of MCDA tools (e.g., Figueira *et al.*, 2005), and tools from these disciplines have been applied to various topics (Linkov *et al.*, 2006a, 2006d; Linkov *et al.*, 2004; Kiker *et al.*, 2005). Recognizing the importance of bringing MCDA tools to bear on risk assessment, the Society for Risk Analysis (SRA) has recently established the Decision Analysis and Risk Specialty Group (DARSG) that is focused on incorporating MCDA tools into risk assessment practice.

Many risk assessments are developed in an environment in which information is scarce, and new information often becomes available during the duration of the project and/or after its execution. This newly available information may be quite different from what was used initially, or it may not support the predictions of models used in the risk assessment. In these cases, adaptive management and value-of-information analysis (VOI) coupled with MCDA would provide a

systematic tool for the dynamic linkage of risk assessment and risk management with new information concerning decision-makers' social and economic priorities. The use of these tools in risk assessment was recently discussed in Linkov *et al.*, 2006b and Linkov *et al.*, 2006c.

In summary, the OMB Risk Bulletin could be strengthened if it were supplemented with a transparent and justifiable decision-making framework for implementation of its standards. The disciplines of multi-criteria decision analysis, value of information analysis, and adaptive management could be complementary to the risk assessment methods and tools discussed in the Bulletin.

### **References:**

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