From the Editors

The issue begins with a letter from William Leiss about Yacov Haimes’s recent risk and systems paper. Leiss emphasizes the importance of “systemic risk,” and he refers to a conference in 2006. Professor Haimes responds that he presented a paper at that meeting, and he hopes that Leiss will prepare a paper to present his ideas.

In this issue, Michael Siegrist comments on the review article published in our April issue by Timothy Earle on trust in risk management. Siegrist notes that while the review was thought-provoking and important for identifying research gaps, it may not have sufficiently clarified the distinction between trust and confidence measures. Earle responds that the issues pointed out by Siegrist are manageable with greater use of the consensus model in risk management settings. It is our intention that review articles such as Earle’s will provoke interesting debates among our readers, and we welcome others to submit comments.

Most of the articles in the issue are about risk assessment. In 2009, the U.S. National Research Council published Science and Decisions: Advancing Risk Assessment as part of an ongoing effort to improve the use of risks assessment. A perspective written by Eileen Abt, Joseph Rodrigs, Jonathan Levy, Lauren Zeise, and Thomas Burke summarizes this interesting report, which considers issues that appear multiple times in every issue of this journal. We welcome comments on this article and the report.

Chronic obstructive lung diseases (COPD) and asthma are serious problems, even without exacerbating factors. Chung-Min Liao, Nan-Hung Hsieh, Chia-Pin Chio, and Szu-Chieh Chen studied the impact of influenza viral infections on those with chronic occupational asthma. They found that these viral infections often increased morbidity, sometimes markedly so.

In 2002, severe acute respiratory syndrome (SARS) commanded worldwide attention when a coronavirus (SARS-CoV) led to more than 8,000 cases and almost 800 deaths worldwide. Toru Watanabe, Timothy Bartrand, Mark Weir, Tatsuho Omura, and Charles Haas developed a dose-response model using mice-based and human epidemiological data. An exponential model provided the most effective fit to the data and led the authors to estimate a dose of SARS-CoV between 16 and 160 plague-forming units (PFU)/person for an apartment building in Hong Kong, depending on the floor. The authors note that this dose-response model helps us understand what would happen if SARS reemerged.

Benzene is a ubiquitous hazard. C. Eric Hack, Lynne Haber, Andrew Maier, Paul Shulte, Bruce Fowler, W. Gregory Lotz, and Russell Savage Jr., all who work for or with U.S. government agencies, used a Bayesian network model in order to incorporate different data sets into an exposure-dose-response assessment for benzene-induced acute myeloid leukemia (AML). The focus of their effort was to determine how to evaluate and compare individual biomarkers and quantitatively incorporate them into government policy.

Estimating the likelihood of an adverse event is perhaps the most difficult part of risk assessment. Piero Baraldi and Enrico Zio compared probabilistic and Dempster-Shafer theory (DST) approaches to model uncertainty analysis in the performance assessment of radioactive waste repositories. The authors used expert opinion and demonstrated some advantage to the DST approach.

Migration of contaminants into food packages is an important exposure assessment issue, as well as a recent public policy issue. Maria Pocas, Jorge Oliveira, Rainer Brandsch, and Timothy Hogg applied Monte Carlo simulation to the task of migration of Irgafos 168 (antioxidant in plastics) from polyethylene into isooctane. The authors report wide variability in migration due to length of migration period, temperature, and other micro environmental conditions.

The outcome of earthquakes depends on a set of factors, most notably event characteristics, the structures impacted, and responses to the event. Katsuichiro Goda and Jiandong Ren developed a
multivariate model to assess the outcomes of combinations of events and structures, applying it to an area of southwestern British Columbia. They found that their model form (Gumbel copula) was predictive of outcomes and recommend it as a way of more rapidly evaluating economic losses.

The outcomes of natural disasters are affected by the type of event and by the host environment, including environmental and ecological conditions, as well as demographic and socioeconomic characteristics of the population. The interactions of these factors are complex and affected by random fluctuations. Lianfa Li, Jinfeng Wang, Hareton Leung, and Chengsheng Jiang built a Bayesian network (BN) that integrates multiple factors and quantification of uncertainties within their assessment system. The authors also used data mining and spatial data analysis to enhance the tool. They report that the model predicted more accurately than other options.

Three papers examined risk perception and communications. Changes in risk perception should lead to changes in behavior, and vice versa. Stephen Brown tested the first part of this expectation with a telephone survey of 255 Australians. Drivers were asked questions about speeding perceptions and behavior, and then follow-ups were asked 6 and 14 weeks later. During weeks 2 through 5, an anti-speeding mass media campaign was conducted. After controlling for baseline perceptions, the authors reported a lower frequency of self-reported speeding among those with stronger anti-speeding perceptions. Notably, decreases in risk perception about speeding did not lead to changes in self-reported speeding.

Simone Dohle, Carmen Keller, and Michael Siegrist examined the influence of the affect heuristic and implicit associations. The latter are stored memories (e.g., cigarette smoking + bad). Using two experimental designs, the authors found both affect and implicit associations were strong predictors of perceptions, attitudes, and behaviors. Unraveling these associations is important to understanding public perceptions and behaviors, and likely responses to public policy.

Branden Johnson and Mathew White examined public trust in risk managers. Using an experimental design to study drinking water standards and brownfields redevelopment, the authors found a complex pattern that demonstrates that the public trusts managers to accomplish some tasks but not others. The implication is that multiple measures are required to assess competence, values, and other trust elements.

Finally, Steven Gendel of the U.S. FDA reviews *Science, Policy and the Value-Free Ideal* (2009) by Heather E. Douglas. He finds the book very relevant and thought-provoking for risk assessors and analysts who contribute to public policy decisions.

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