

Tuesday – PDC 1

Bayesian Decision Analysis and Professional Judgment in Exposure Assessment

TUESDAY, 4 November, 2014 | 8:00 a.m.–5:00 p.m.

Early Registration (by 29 August 2014)

Member Price \$1250 RM (\$390 USD) / Non Member Price \$1480 RM (\$460 USD)

Advance Registration (by 29 August 2014)

Member Price \$1410 RM (\$440 USD) / Non Member Price \$1640 RM (\$510 USD)

Limit: 40

8 CM Credits/0.8 CEU/COC/0.5 CMP/7.0 SDUs/5.0 CEP Points

Level: Intermediate

Topic:

Exposure Assessment

Description:

Professional judgment is already an integral component of most occupational exposure assessments. The Bayesian statistical framework offers exciting opportunities for improving the accuracy, efficiency, and transparency of our exposure judgments. Bayesian techniques can be used to formally combine our professional judgment regarding a particular exposure and its uncertainty along with the statistical analysis of current exposure data. The language and framework of the approach holds promise for expressing the output of exposure assessments in a manner that is much more easily understood and communicated than the output from more traditional statistical analysis. The Bayesian decision analysis approach formalizes traditional exposure assessment processes already used by industrial hygienists today. This PDC will provide an overview of the Bayesian framework for decision analysis and explore, through discussion and workshops, opportunities for its application in IH data interpretation and exposure risk assessment.

Value Added:

Software used to perform Bayesian decision analysis calculations will be distributed and used to improve exposure judgments.

Prerequisites:

Participants should be familiar with the AIHA *Strategy for Assessing and Managing Occupational Exposures*. Experience in exposure assessments and monitoring data interpretation and some experience in mathematical exposure models is recommended.

Learning Aids:

Attendees should bring a laptop computer for the Bayesian decision analysis software that will be distributed.

Note that the software is designed for Windows-based PCs. It will not run on a Macintosh computer without an emulator.

Outcomes:

Upon completion, participants will be able to

- Define the appropriate decision statistic for exposure management and describe an approach for arriving at one within an organization
- Describe a Bayesian framework for decision analysis and relate a Bayesian framework for decision analysis to the AIHA Exposure Assessment Strategy
- Use software tools to perform a Bayesian decision analysis of industrial hygiene monitoring data and exposure models
- Identify determinants of exposure for inhalation exposures in actual workplace settings and be able to express uncertainties in these in a distributional form
- Define similarly exposed groups (SEGs) using knowledge of the workplace, operations, workforce, materials, tasks, exposure controls
- Assess exposures both with and without monitoring data using rules of thumb (heuristics)
- Identify the factors that lead to greater accuracy in exposure judgments
- Apply Bayesian Decision Analysis to assist them in making better judgments

Outline:

- Making Good Exposure Decisions: Interpreting Data
- Importance of Professional Judgment
- AIHA Exposure Assessment Model: Inherently a Bayesian Approach
- Improving Judgments: Bayesian Decision Analysis (BDA) Theory and Tool
- Putting Improvement Ideas to Practice: Scenario Examples
- Use of Subjective Decisions
- Integrating Improvement Activities into Your Professional Practice

Transfer of Knowledge:

Instructors will evaluate participants understanding of the materials presented based on

- Practice exercises,
- Workshops, and
- Group activities.

Instructor:

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