



### **E2 Admissibility Decisions Regarding Toxicology and Engineering Evidence: Judicial Review of *Daubert* Factors and Forensic Expert Qualifications 1993-2010**

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After attending this presentation, attendees will be familiar with the *Daubert* factors that were most frequently reviewed by judges in 200 cases involving toxicological and engineering expert testimony (100 cases per each evidence type). Attendees will also become aware of the key expert qualifications that were discussed and how the *Daubert* factors discussed and qualifications that were reviewed influenced the admissibility decision.

This presentation will impact the forensic science community by providing practitioners with insight into the characteristics of evidence that judges evaluate, which will help those providing expert testimony provide information that addresses those characteristics. This information is relevant to members of the broader legal community that work with forensic experts. For example, if attorneys are aware that judges who consider engineering to be scientific evidence will examine the falsifiability and known or potential rate of error associated with the evidence, then the attorneys are better able to prepare their experts to testify about those characteristics.

This study was a content analysis on a systematic sample of 200 U.S. District Court cases published on *Lexis* between July 1, 1993 and March 1, 2010 in which the admissibility of expert testimony was at issue. These cases were selected from the two of the most frequently occurring kinds of forensic expert testimony: toxicology and engineering. One-hundred cases from each category were systematically selected by decision date so that they spanned the period of time from the July 1993 *Daubert* decision to the present. Data was rendered from these cases using standard content analysis techniques that have been used by the researchers in other socio-legal research and a three-stage data verification process. Codeable cases contained a substantive discussion of the admissibility of proffered expert testimony that included the rule(s) of evidence relevant to the analysis, and a discussion of how the evidence met or failed to meet the criteria for admissibility. Challenges to admissibility were substantive (e.g., related to the characteristics of the experts or the evidence), rather than procedural challenges in which the attorneys objected to the timeliness of the expert's report or other statutory issues. Cases in which no proffer of evidence was made (e.g., a party claims that a decision should be overturned because an attorney failed to proffer expert testimony) were excluded because there was no evaluation of the evidence.

Of the 100 proffers of toxicology expert testimony, 22% were found to be admissible and 78% were found to be inadmissible. The most frequently mentioned expert qualifications in admissible cases were experience, skill/subject matter knowledge, and education. The most frequently mentioned expert qualifications for inadmissible cases was skill/subject matter knowledge, followed by education and experience. In twenty-six cases the expert's qualifications were not discussed. The *Daubert* guidelines and non-*Daubert* factors were mentioned infrequently in admissible cases. The most frequently mentioned *Daubert* guideline in the inadmissible cases was falsifiability, followed closely by general acceptance, existence or maintenance of standards controlling the technique or operation, peer review/publication, and error rate. The most frequently mentioned non-*Daubert* factor mentioned in admissible cases was the underlying facts/data/studies, followed by the use of facts/data relied upon by other experts, and reliance on verifiable facts/data.

Of the 100 proffers of damages expert testimony, 53% were found to be admissible and 47% were found to be inadmissible. The most frequently mentioned expert qualifications in admissible cases were skill/subject matter knowledge, experience, and education. Relatively few expert qualifications were mentioned in inadmissible cases, but the most frequently mentioned of these was experience. The *Daubert* guidelines were mentioned infrequently in both admissible and inadmissible cases. Most frequently mentioned in both instances was falsifiability, followed by general acceptance, and peer review and publication. The most frequently mentioned non-*Daubert* factors in both admissible and inadmissible cases were the quality of the underlying facts/data/studies, and the use of facts or data relied on by other experts.

#### **Evidence Admissibility, Expert Testimony, Toxicology and Engineering**