C28 Scientific Perspective on *Frye* and *Daubert* With Respect to the NAS Report

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After attending this presentation, attendees should gain some insight into the necessity for standards in the engineering sciences and the lack of standards in engineering sciences.

This presentation will impact the forensic community by encouraging the development of standards, protocols, and guides.

Engineering and science have a variety of goals, which are readily understood by the general public. Some of the most important goals, such as the protection of life and property, are not so well known or understood. In engineering and in science there are ethical standards to which practitioners adhere. In the context of forensic science, investigations are carried out to determine the events that led to the incident and in many instances, to develop methods of avoidance. At the present time there are two standards that are used by the courts to determine the validity of the expert's testimony.

The *Frye* Standard stems from a 1923 case that established the minimum standard required for the admission of expert testimony in federal cases. This standard requires the expert to use data and methodology "generally accepted" by other experts. In the *Daubert* case in 1993 the evidence that was presented by the plaintiff was considered to be novel scientific evidence or junk science. Therefore, this novel scientific evidence did not qualify under the *Frye* Standard as admissible expert testimony. In the U.S. Supreme Court appeal the lower court rulings were overturned and a new standard was developed where the reliability of the evidence must meet a non-exclusive four part test.

- Can the theory or technique be tested?
- Have they been subjected to peer review and publication?
- Is there a known or potential rate of error?
- Is there general acceptance in the scientific communit similar to the Frye Standard?

On November 22, 2005, the Science, State, Justice, Commerce, and Related Agencies Appropriations Act of 2006 became law. Congress authorized the National Academy of Sciences to conduct a study on forensic sciences. The Senate Report set forth many charges to the forensic sciences community including to disseminate best practices and guidelines concerning the collection and analysis of forensic evidence to help insure quality and consistency in the use of forensic technologies and techniques to solve crimes, investigate deaths, and protect the public. One of the issues covered during the committee's hearings was the fundamental of the scientific method as applied to forensic practice – hypothesis generation and testing, "falsifiability" and replication, and peer review of scientific publications. Another observation was the lack of mandatory standardization, certification, and accreditation. The committee stated that the fragmentation problem is compounded because operational principles and procedures for many forensic science disciplines are not standardized or embraced. Often there are no standard protocols governing forensic practice in a given discipline. One recommendation is to establish a national code of ethics for all forensic science disciplines.

It is clear that standards and protocols must be developed for the forensic sciences. In the engineering sciences there are many recognized standards in certain fields, but they are utterly lacking in others. For example, the fire sciences have a multitude of standards, guides, and protocols that were developed by ASTM and NFPA. In the engineering sciences there are but a handful of standards. Some were developed 25 years ago and a few others were developed five years ago when a major push was made in ASTM to develop such standards. Since then no

standards have been developed, and their development has actually been curtailed. The AAFS through its long and close association with ASTM, has an opportunity develop standards, guides, and protocols in forensic engineering sciences.

Standards, Protocols, Guides

 ** Presenting Author*