NATIONAL COMMISSION ON FORENSIC SCIENCE

NIST National Institute of Standards and Technology U.S. Department of Commerce

Recommendation to the Attorney General
Technical Merit Evaluation of Forensic Science Methods and Practices

Subcommittee
Scientific Inquiry and Research
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Final Draft

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Overview

The NCFS has already approved a Views Document on the importance of establishing the technical merit of all forensic science methodologies. The required studies should be independently[1] evaluated, and accepted prior to the creation of documentary standards[2] involving test methods[3] and practices[4] based on these disciplines.

Recommendations

The NCFS Charter provides for the Attorney General to "refer recommendations regarding measurement standards and priorities for standards development to the Director of NIST, as the Attorney General deems appropriate."[5] The National Commission on Forensic Science

[1] For the purposes of this document, "independent" refers to a body that is fair, impartial, and without conflict of interest in the results of the evaluation. An entity's independence does not imply that this work will be conducted without the contribution of individuals who are knowledgeable of a specific discipline. It is expected that an independent scientific body will be able to retain the relevant experts to advise the independent body as to the real life forensic application of the science.

[2] For simplicity, this report focuses on documentary standards, which are written agreements containing technical specifications or other precise criteria that may contain rules, guidelines, or definitions of characteristics. Brietenberg, Maureen A. "Historical Notes on Standardization." *The ABC's of Standards Activities.* NISTIR 7614. Gaithersburg, MD: National Institute of Standards and Technology, August 2009. P.5. Web. 5 July 2016.

[3] A "test method" is defined as "a definitive procedure that produces a test result" per "Form and Style for ASTM Standards." ASTM International. ASTM International, West Conshohocken, PA: ASTM International, January 2015. Web. 5 July 2016. (Hereafter, ASTM Definitions).

[4] A "practice" is defined as "a definitive set of instructions for performing one or more specific operations that does not produce a test result." ASTM Definitions, p.1.

[5] United States. Department of Justice. *Charter U.S. Department of Justice National Commission on Forensic Science,* Section 5. Washington, DC: U.S. Government Printing Office, 23 April 2015. Web. 5 July 2016.

proposes that the Attorney General endorse and refer to the Director of NIST the following recommendations regarding measurement standards and priorities for standards development:

> **Recommendation #1: NIST should establish an in-house entity with the capacity to conduct independent scientific evaluations of the technical merit of test methods and practices used in forensic science disciplines.**

The 2009 NAS report, ''Strengthening Forensic Science in the United States: A Path Forward," (hereafter, "NAS Report") found "substantial evidence indicating that the level of scientific development and evaluation varies substantially among the forensic science disciplines" and "[a] body of research is required to establish the limits and measures of performance and to address the impact of sources of variability and potential bias."[6] Currently, no independent national scientific entity or organization has been charged with the independent evaluation of technical merit studies for forensic science test methods. In order to ensure that the evaluations of forensic science tests, methods and practices are rigorous, reliable, uniform, consistent, fair, and impartial, it is critical that a single independent scientific agency be responsible for this work. NIST is an independent science agency and has the intellectual resources to assemble the necessary knowledge base. However, NCFS recognizes that NIST is a non-regulatory agency and is not recommending that NIST's function here will be regulatory in nature.

> **Recommendation #2: The results of the evaluations will be issued by NIST as publicly available resource documents. NIST's evaluation may include but is not limited to: a) research performed by other agencies and laboratories, b) its own intramural research program, or c) research studies documented in already published scientific literature.[7] NIST should initially begin its work by piloting three resource documents to establish their design and requirements. The release of these documents should be broadly disseminated in the scientific and criminal justice communities and accompanied by judicial trainings.**

While NIST may have a centralized evaluative role, the NCFS encourages universities, scientific agencies, and other research entities (e.g., the Statistical and Applied Mathematical Sciences Institute (SAMSI) and the Center for Statistics and Applications in Forensic Evidence (CSAFE)) to conduct research investigating the technical merit of forensic science disciplines. NIST will evaluate these data, reports, and studies generated by this robust and diverse scientific research community. The resulting resource documents will be continually updated as the state of the science develops. Centralizing the evaluative role will facilitate the development of a knowledge base at NIST that will build over time.

> **Recommendation #3: The Organization of Scientific Area Committees for Forensic Science (OSAC) leadership, the Forensic Science Standards Board (FSSB), should commit to placing consensus documentary standards on the OSAC Registry of Approved Standards for only those forensic science test methods and practices**

[6] National Research Council. *Strengthening Forensic Science in the United States: A Path Forward*, p.7-8. Washington, DC: The National Academies Press, 2009. doi: 10.17226/12589.

[7] United States. National Commission on Forensic Science. Scientific Literature in Support of Forensic Science and Practice. (Washington: The Commission, 30 January 2015). Web. 5 July 2016.

where technical merit has been established by NIST, or in the interim, established by an independent scientific body. An example of an interim independent scientific body could be an OSAC created Technical Merit Resource Committee composed of measurement scientists and statisticians appointed by NIST and tasked with the evaluation of technical merit.

This recommendation aligns with the OSAC Registry of Approved Standards statement that "the methods it contains have been assessed to be valid."[8]

All three recommendations are consistent with NIST's mission,[9] statutory function,[10] and delegated responsibilities in the Memorandum of Understanding.[11] These three recommendations are founded on the principle that forensic science tests, methods and practices should be subject to independent scientific evaluation before they are used in judicial proceedings. The vision and hope of the NCFS is that NIST will develop resource documents for all forensic science disciplines, but that process will take time. In the interim, proponents of a forensic science test method or practice can seek technical merit evaluation from another independent scientific body, such as a technical merit resource committee within OSAC.

[8] "OSAC Registries." National Institute of Standards and Technology. National Institute of Standards and Technology, 27 October 2015. Web. 5 July 2016.

[9] "NIST Mission, Vision, Core Competencies, and Core Values."National Institute of Standards and Technology. National Institute of Standards and Technology, 10 July 2009 (updated 27 May 2016). Web. 5 July 2016.

[10] "National Institute of Standards and Technology," U.S. Code 2015 ed. Title 15, Sec. 272 (b).

[11] United States. Department of Justice and National Institute of Standards and Technology. *Memorandum of Understanding between the Department of Justice and the National Institute of Standards and Technology in Support of the National Commission on Forensic Science and the Organization of Scientific Area Committees,* Part VI, Section B. Washington, DC: U.S. Government Printing Office, 5 August 2015. Web. 5 July 2016.