



Office of the Attorney General
Washington, D. C. 20530

September 6, 2016

MEMORANDUM FOR HEADS OF DEPARTMENT COMPONENTS

FROM:

THE ATTORNEY GENERAL

SUBJECT:

Recommendations of the National Commission on Forensic Science;
Announcement for NCFS Meeting Eleven

As part of the Department's ongoing coordination with the National Commission on Forensic Science (NCFS), I am responding today to several NCFS recommendations to advance and strengthen forensic science. These recommendations involve promoting professional responsibility among forensic practitioners, instituting best practices in quality management of forensic laboratories, and advancing the relationship between academic forensic research and practical implementation.

I am pleased to announce today that I am directing Department components to take several steps to support these goals. I ask that you work with the Deputy Attorney General to implement these policies and issue guidance as appropriate.

1. Department forensic laboratories will review their policies and procedures to ensure that forensic examiners are not using the expressions "reasonable scientific certainty" or "reasonable [forensic discipline] certainty" in their reports or testimony. Department prosecutors will abstain from use of these expressions when presenting forensic reports or questioning forensic experts in court unless required by a judge or applicable law.
2. The Department is adopting a new code of professional responsibility for Department forensic laboratories. This code, which builds on the Department's Scientific Research and Integrity Policy and the Guiding Principles of Professional Responsibility of the American Society of Crime Laboratory Directors/Laboratory Accreditation Board, will apply to Departmental forensic examiners. The code is attached here.
3. The Department's forensic laboratories that support criminal investigation and prosecution will post current quality management system (QMS) documents¹ and existing summaries of internal validation studies online within 18 months. QMS documents and

¹ QMS documents are documents in existence or that would be created as part of the ordinary course of business or in accordance with other existing obligations and include policies, procedures or specifications for forensic testing, examination, and analysis, and classification standards for forensic examiners.

existing summaries of internal validation studies may be posted in a format of each laboratory's choice and redacted for security, investigative, intelligence, and other statutory exemption reasons. This mandate does not alter existing discovery obligations.

4. The National Institute of Justice will explore the possibility of implementing a grant program to fund multiyear post-doctoral fellowships at federal, state, and local forensic science service providers and forensic medicine service providers.

Department of Justice
Code of Professional Responsibility for the Practice of Forensic Science

The following Code of Professional Responsibility for the Practice of Forensic Science (Code) defines a framework for promoting integrity and respect for the scientific process.¹ Forensic science providers, both practitioners and agencies, including its managers, must meet requirements 1-15 enumerated below. Requirement 16 specifically refers to the responsibility of forensic science management rather than individual practitioners.

1. Accurately represent relevant education, training, experience, and areas of expertise.
2. Be honest and truthful in all professional affairs including not representing the work of others as one's own.
3. Foster and pursue professional competency through such activities as training, proficiency testing, certification, and presentation and publication of research findings.
4. Commit to continuous learning in relevant forensic disciplines and stay abreast of new findings, equipment, and techniques.
5. Conduct research and forensic casework using the scientific method or agency best practices. Where validation tools are not known to exist or cannot be obtained, conduct internal or inter-laboratory validation tests in accordance with the quality management system in place.
6. Handle evidentiary materials to prevent tampering, adulteration, loss, or nonessential consumption of evidentiary materials.
7. Avoid participation in any case in which there is a conflict of interest.
8. Conduct examinations that are fair, unbiased, and fit-for-purpose.
9. Make and retain contemporaneous, clear, complete, and accurate records of all examinations, tests, measurements, and conclusions, in sufficient detail to allow meaningful review and assessment by an independent professional proficient in the discipline.
10. Ensure interpretations, opinions, and conclusions are supported by sufficient data and minimize influences and biases for or against any party.

¹ These provisions are not intended to, and do not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.

11. Render interpretations, opinions, or conclusions only when within the practitioner's proficiency or expertise.
12. Prepare reports and testify using clear and straightforward terminology, clearly distinguishing data from interpretations, opinions, and conclusions. Reports should disclose known limitations that are necessary to understand the significance of the findings.
13. Do not alter reports and other records or withhold information for strategic or tactical advantage.
14. Document and, if appropriate, inform management or quality assurance personnel of nonconformities² and breaches of law or professional standards.
15. Honestly communicate with all parties (the investigator, prosecutor, defense, and other expert witnesses) about all information relating to their analyses, when communications are permitted by law and agency practice.³
16. Inform the prosecutors involved through proper laboratory management channels of material nonconformities or breaches of law or professional standards that adversely affect a previously issued report or testimony.⁴

² Nonconformities are any aspect of laboratory work that does not conform to its established procedures. An evaluation of the nonconformity risk is appropriate to deciding whether or not reporting is necessary.

³ Agency practice may vary depending on the status of the case or due to safety concerns.

⁴ Prosecutors have independent reporting requirements based on codes of professional responsibility and ethics.

**UNITED STATES DEPARTMENT OF JUSTICE
UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS
FOR THE FORENSIC FIREARMS/TOOLMARKS DISCIPLINE
PATTERN EXAMINATION**

I. Application

This document applies to Department of Justice examiners who are authorized to prepare reports and provide expert witness testimony regarding the forensic pattern examination of firearms/toolmarks evidence. This document applies to reports and to testimony based on reports that are finalized after its effective date. Section III is limited to conclusions that result from the comparison of two firearms/toolmarks patterns. Section IV is applicable to all forensic firearms/toolmarks discipline examinations unless otherwise limited by the express terms of an individual qualification or limitation.

II. Purpose and Scope¹

The Uniform Language for Testimony and Reports is a quality assurance measure designed to standardize the expression of appropriate consensus language for use by Department examiners in their reports and testimony. This document is intended to describe and explain terminology that may be provided by Department examiners. It shall be attached to, or incorporated by reference in, laboratory reports or included in the case file.

Department examiners are expected to prepare reports and provide testimony consistent with the directives of this document. However, examiners are not required to provide a complete or verbatim recitation of the definitions or bases set forth in this document. This is supplemental information that is intended to clarify the meaning of, and foundation for, the approved conclusions.

This document should not be construed to imply that terminology, definitions, or testimony provided by Department examiners prior to its effective date that may differ from that set forth below was erroneous, incorrect, or indefensible. It should also not be construed to imply that the use of different terminology or definitions by non-Departmental forensic laboratories or individuals is erroneous, incorrect, or indefensible.

This document does not, and cannot, address every contingency that may occur. For example, an examiner may not have an opportunity to fully comply with this document's directives during a testimonial presentation due to circumstances beyond his or her control. In addition, this document does not prohibit the provision of conclusions in reports and testimony that fall outside of its stated scope. Finally, the substantive content of expert testimony may be subject to legal rules imposed by the court or jurisdiction in which it is provided.

¹ This document is not intended to, does not, and may not be relied upon to create any rights, substantive or procedural, enforceable by law by any party in any matter, civil or criminal; nor does it place any limitation on otherwise lawful investigative or legal prerogatives of the Department of Justice.

III. Conclusions Regarding Forensic Pattern Examination of Firearms/Toolmarks Evidence

An examiner may provide any of the following conclusions:

1. Source identification (i.e., identified)
2. Source exclusion (i.e., excluded)
3. Inconclusive

Source identification

‘Source identification’ is an examiner’s conclusion that two toolmarks originated from the same source. This conclusion is an examiner’s opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the examiner would not expect to find that same combination of individual characteristics repeated in another source and has found insufficient disagreement of individual characteristics to conclude they originated from different sources.

The basis for a ‘source identification’ conclusion is an examiner’s opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources.

A ‘source identification’ is the statement of an examiner’s opinion (an inductive inference²) that the probability that the two toolmarks were made by different sources is so small that it is negligible.

Source exclusion

‘Source exclusion’ is an examiner’s conclusion that two toolmarks did not originate from the same source.

The basis for a ‘source exclusion’ conclusion is an examiner’s opinion that the observed class and/or individual characteristics provide extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source.

Inconclusive

‘Inconclusive’ is an examiner’s conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual

² Inductive reasoning (inferential reasoning):

A mode or process of thinking that is part of the scientific method and complements deductive reasoning and logic. Inductive reasoning starts with a large body of evidence or data obtained by experiment or observation and extrapolates it to new situations. By the process of induction or inference, predictions about new situations are inferred or induced from the existing body of knowledge. In other words, an inference is a generalization, but one that is made in a logical and scientifically defensible manner.

OXFORD DICTIONARY OF FORENSIC SCIENCE 130 (Oxford Univ. Press 2012).

characteristics such that the examiner is unable to identify or exclude the two toolmarks as having originated from the same source.

The basis for an ‘inconclusive’ conclusion is an examiner’s opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an ‘inconclusive’ conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of ‘source identification;’ a lack of any observed microscopic similarity; or microscopic dissimilarity that is insufficient to form the conclusion of ‘source exclusion.’

IV. Qualifications and Limitations of Forensic Firearms/Toolmarks Discipline Examinations

- A conclusion provided during testimony or in a report is ultimately an examiner’s decision and is not based on a statistically-derived or verified measurement or comparison to all other firearms or toolmarks. Therefore, an examiner shall not:
 - assert that a ‘source identification’ or a ‘source exclusion’ conclusion is based on the ‘uniqueness’³ of an item of evidence.
 - use the terms ‘individualize’ or ‘individualization’ when describing a source conclusion.
 - assert that two toolmarks originated from the same source to the exclusion of all other sources.
- An examiner shall not assert that examinations conducted in the forensic firearms/toolmarks discipline are infallible or have a zero error rate.
- An examiner shall not provide a conclusion that includes a statistic or numerical degree of probability except when based on relevant and appropriate data.
- An examiner shall not cite the number of examinations conducted in the forensic firearms/toolmarks discipline performed in his or her career as a direct measure for the accuracy of a conclusion provided. An examiner may cite the number of examinations conducted in the forensic firearms/toolmarks discipline performed in his or her career for the purpose of establishing, defending, or describing his or her qualifications or experience.
- An examiner shall not assert that two toolmarks originated from the same source with absolute or 100% certainty, or use the expressions ‘reasonable degree of scientific certainty,’ ‘reasonable scientific certainty,’ or similar assertions of reasonable certainty in either reports or testimony unless required to do so by a judge or applicable law.⁴

³ As used in this document, the term ‘uniqueness’ means having the quality of being the only one of its kind.’ OXFORD ENGLISH DICTIONARY 804 (Oxford Univ. Press 2012).

⁴ See Memorandum from the Attorney General to Heads of Department Components (Sept. 9. 2016), <https://www.justice.gov/opa/file/891366/download>.



NATIONAL COMMISSION ON FORENSIC SCIENCE



Recommendation to the Attorney General Use of the Term “Reasonable Scientific Certainty”

Subcommittee
Reporting and Testimony

Date of Current Version	03/22/2016
Approved by Subcommittee	03/07/2016
Approved by Commission	03/22/2016
Action by Attorney General	09/06/2016

Attorney General Action

The Department of Justice (DOJ) responded on September 6, 2016, by instructing Department forensic laboratories to review their policies and procedures to ensure that forensic examiners are not using the expressions “reasonable scientific certainty” or similar terms in their reports or testimony and instructed Department prosecutors to abstain from use of these expressions when presenting forensic reports or questioning forensic experts in court unless required by a judge or applicable law. For more information, please see the Attorney General’s Memorandum at: <https://www.justice.gov/opa/file/891366/download>.

Commission Action

The Commission voted to adopt this Recommendation on March 22, 2016 by more than a two-thirds majority vote (86% yes, 7% no, 7% abstain).

Note: This document includes recommendations developed and adopted by the National Commission on Forensic Science and proposes specific acts that the Attorney General could take to further the goals of the Commission. The portion of the document directly labeled “Recommendations” represents the formal recommendations of the Commission. Information beyond that section is provided for context. This document does not necessarily represent the views of the Department of Justice or the National Institute of Standards and Technology. The National Commission on Forensic Science is a Federal Advisory Committee established by the Department of Justice. For more information, please visit: <https://www.justice.gov/ncfs>.

Overview

Forensic discipline conclusions are often testified to as being held “to a reasonable degree of scientific certainty” or “to a reasonable degree of [discipline] certainty.” These terms have no scientific meaning and may mislead factfinders about the level of objectivity involved in the analysis, its scientific reliability and limitations, and the ability of the analysis to reach a conclusion. Forensic scientists, medical professionals and other scientists do not routinely express opinions or conclusions “to a reasonable scientific certainty” outside of the courts. Neither the

Daubert nor *Frye* test of scientific admissibility requires its use, and consideration of caselaw from around the country confirms that use of the phrase is not required by law and is primarily a relic of custom and practice. There are additional problems with this phrase, including:

- There is no common definition within science disciplines as to what threshold establishes “reasonable” certainty. Therefore, whether couched as “scientific certainty” or “[discipline] certainty,” the term is idiosyncratic to the witness.
- The term invites confusion when presented with testimony expressed in probabilistic terms. How is a lay person, without either scientific or legal training, to understand an expert’s “reasonable scientific certainty” that evidence is “probably” or possibly linked to a particular source?

Recommendations

The National Commission on Forensic Science recommends that the Attorney General take the following actions:

Recommendation #1: The Attorney General should direct all attorneys appearing on behalf of the Department of Justice (a) to forego use of these phrases when presenting forensic discipline testimony unless directly required by judicial authority as a condition of admissibility for the witness’ opinion or conclusion, and (b) to assert the legal position that such terminology is not required and is indeed misleading.

Because the Government is the primary proponent of forensic discipline testimony in criminal prosecutions and because of its duty to seek justice, Government attorneys should eschew usage of this phrasing and appropriately challenge any suggestion to a trial court that such language be used when forensic discipline testimony is presented. Science should be used in the courtroom to clarify and elucidate rather than obscure.

Recommendation #2: The Attorney General should direct all forensic science service providers and forensic science medical providers employed by Department of Justice not to use such language in reports or couch their testimony in such terms unless directed to do so by judicial authority.

Although the impetus for this terminology came from courts and lawyers, forensic scientists and medical examiners in some instances have come to embrace its use. Adopting this recommendation will provide further support for the abandonment of this terminology and spur discussion and development of appropriate and clearer phrasing.

Recommendation #3: The Attorney General should, in collaboration with NIST, urge the OSACs to develop appropriate language that may be used by experts when reporting or testifying about results or findings based on observations of evidence and data derived from evidence.

The scientific community, through the OSAC structure, may be best positioned to propose language that conveys the nature of the examination itself, including an expression of the uncertainty in the measurement or in the data, the bases for any opinion (the underlying information, studies, observations) and the limitations relating to the results of the examination. Adopting this recommendation will help develop language based on and supported by scientific data and principles that can be useful to judges and juries.

Rule 2:702 TESTIMONY BY EXPERTS (Rule 2:702(a)(i) derived from Code § 8.01-401.3(A)).

(a) Use of Expert Testimony.

(i) In a civil proceeding, if scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise.

(ii) In a criminal proceeding, expert testimony is admissible if the standards set forth in subdivision (a)(i) of this Rule are met and, in addition, the court finds that the subject matter is beyond the knowledge and experience of ordinary persons, such that the jury needs expert opinion in order to comprehend the subject matter, form an intelligent opinion, and draw its conclusions.

(b) Form of opinion. Expert testimony may include opinions of the witness established with a reasonable degree of probability, or it may address empirical data from which such probability may be established in the mind of the finder of fact. Testimony that is speculative, or which opines on the credibility of another witness, is not admissible.



NATIONAL COMMISSION ON FORENSIC SCIENCE

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

Testimony Using the Term “Reasonable Scientific Certainty”

Subcommittee

Reporting and Testimony

Type of Work Product

Views Document

Statement of the Issue

It is the view of the National Commission on Forensic Science (NCFS) that legal professionals should not require that forensic discipline testimony be admitted conditioned upon the expert witness testifying that a conclusion is held to a “reasonable scientific certainty,” a “reasonable degree of scientific certainty,” or a “reasonable degree of [discipline] certainty.” The legal community should recognize that medical professionals and other scientists do not routinely use “to a reasonable scientific certainty” when expressing conclusions outside of the courts. Such terms have no scientific meaning and may mislead factfinders [jurors or judges] when deciding whether guilt has been proved beyond a reasonable doubt. Forensic science service providers should not endorse or promote the use of this terminology. The Commission recognizes the right of each jurisdiction to determine admissibility standards but expresses this view as part of its mandate to “develop proposed guidance concerning the intersection of forensic science and the courtroom.”

Forensics experts are often required to testify that the opinions or facts stated are offered “to a reasonable scientific certainty” or to a “reasonable degree of [discipline] certainty.” Outside of the courts, this phrasing is not routinely used in scientific disciplines, a point acknowledged in the *Daubert* decision (“it would be unreasonable to conclude that the subject of scientific testimony must be ‘known’ to a certainty; arguably, there are no certainties in science.”). *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 590 (1993). Moreover, the terminology, in its varying forms, is not formally defined in standard medical or scientific reference materials. In the courts, this phrase is almost always a matter of custom, but in some jurisdictions, it results from an appellate court ruling or trial judges’ or lawyers’ belief that it is a necessary precondition for admissibility. In the courtroom setting, the phrase’s use of “certainty” risks misleading or confusing the factfinder.

I – Putting the Issue in Context

The NAS Report *Strengthening Forensic Science—A Path Forward*, explained

that the existing legal regime—including the rules governing the admissibility of forensic evidence, the applicable standards governing appellate review of trial court decisions, the limitations of the adversary process, and judges and lawyers who often lack the scientific expertise necessary to comprehend and evaluate forensic evidence—is inadequate to the task of curing the documented ills of the forensic science disciplines. This matters a great deal, because “forensic science is but the handmaiden of the legal system.”

NAS Report, 85 (citation omitted). Although not addressing the specific issue of using terms such as “reasonable degree of scientific certainty,” the Report concludes its discussion of “Forensic Science Evidence in Litigation” with the following observation pertinent to this topic: “the adversarial process relating to the admission and exclusion of scientific evidence is not suited to the task of finding ‘scientific truth.’” *Id.*, 110.

II – The Historic Background to Use of the “Reasonable Degree of Certainty” Terminology

The requirement that an expert testify to a “degree of certainty” emerged in the context of medical testimony, when witnesses in civil cases were asked about the potential consequences of an injury or illness. In predicting *future* events, courts wanted to avoid speculation, and required that the testifying doctor express such an opinion with some degree of certitude. By contrast, forensic discipline evidence is utilized to explain the past and needs a different vocabulary to show its relevance and probativeness.

As best as can be ascertained, the “reasonable degree of certainty” formulation was first applied to scientific evidence in 1935, when a witness was “asked whether he could determine with reasonable scientific certainty the cause of the capsizing of the boat.” *Herbst v. Levy*, 279 Ill. App. 353, 358 (Ill. App. Ct. 1935). This was not the mandate of the court but a stylistic approach adopted by a lawyer. Not until 1969 was the terminology linked to the admissibility determination:

If the witness, based upon his background skill, possesses extraordinary training to aid laymen in determining facts and if he bases his answer upon what he believes to be reasonable scientific or engineering certainty, generally the evidence should be admitted, subject, of course, to the cross-examination of the adversary.

Twin City Plaza, Inc. v. Central Surety & Ins. Corp., 409 F.2d 1195, 1203 (8th Cir. 1969). This statement was made without legal or scientific analysis as to what the term meant or why its use was being mandated.

The modern view recognizes that the term is not required as a condition of admitting expert evidence. A review of state court case law, undertaken by the Hawaii Supreme Court in 2014, confirmed this and concluded, for its state, that “trial courts should not require a ‘reasonable degree of scientific certainty’ before admitting expert opinions but may exclude expert testimony based on speculation or possibility.” *State v. DeLeon*, 131 Haw. 463, 484 (Haw. 2014).

The same is true in federal courts—neither the *Daubert* trilogy of cases [*Daubert v. Merrell Dow Pharmaceuticals*, *Joiner v. General Electric*, or *Carmichael v. Kumho Tire*] nor Federal Rules of Evidence 702-705 require such language. As well, both the *Daubert* and *Frye* tests, when properly implemented, serve to screen out speculative testimony and thus further demonstrate the lack of need for the “reasonable degree of certainty” language.

III – Emerging Criticism of the Terminology

Both academic and policy writing have addressed the lack of a requirement for, and the problems arising from use of, the term “reasonable degree of [] certainty.” For example, *The New Wigmore: A Treatise on Evidence*, explains in its 2015 supplement that there is no requirement that such terminology be used and that the standard for admissibility only requires that the expert’s opinion be a reasonable one, deduced from the evidence. Kaye, Bernstein, and Mnookin, *The New Wigmore: Expert Evidence*, §1.5.2(c), 2d Edition, 2011 New York: Aspen Pub. Co., 2015 Cumulative Supplement (in press). As another scholar concluded,

The term “reasonable medical certainty” has no scientific meaning. Its legal meaning is at best ambiguous, at worst misleading. It is not required by the Federal Rules of Evidence, nor any other evidence code. More importantly, the term (“scientific certainty”) is problematic for a different reason—misleading the jury, and should be excluded under Federal Rule 403 for that reason alone.

Paul Gianelli, Scientific Evidence “Reasonable Scientific Certainty”: A Phrase in Search of a Meaning, *Crim. Just.*, Spring 2010, at 40, 41.

Criticism has also emerged in judicial decisions. In more than one instance in recent years, a court has precluded all mention of “reasonable degree of certainty” in a forensic evidence case. “The Court therefore concluded that to allow Detective Valenti, or any other ballistics examiner, to testify that he had matched a bullet or casing to a particular gun ‘to a reasonable degree of ballistic certainty’ would seriously mislead the jury as to the nature of the expertise involved.” *United States v. Glynn*, 578 F. Supp. 2d 567, 574 (S.D.N.Y. 2008). In *Glynn*, the expert was limited to testifying “in terms of ‘more likely than not,’ but nothing more.”

The concern over this terminology has been recognized in the forensics community as well. The 2012 report *Latent Print Examination and Human Factors: Improving the Practice Through a Systems Approach: The Report of the Expert Working Group on Human Factors in Latent Print Analysis* emphasizes that:

Outside the courtroom, however, scientists do not communicate their findings in this fashion. An astronomer who reports the discovery of an exoplanet does not characterize the finding as satisfying some “reasonable degree of scientific certainty.” A chemist who deduces the identity of a compound from its nuclear magnetic resonance spectrum has no table of degrees of scientific certainty with which to label the deduction. Scientists might refer to personal degrees of confidence in a finding or to the degree of controversy

surrounding it, but there is no generally accepted or working definition of a “reasonable degree of certainty” in scientific discourse.

LATENT PRINT EXAMINATION, 119.

IV – The Problems Arising from this Terminology

The phrase “reasonable degree of scientific certainty,” which combines two words of concern—“scientific” and “certainty”—has no scientific meaning. One scholar summed it up this way:

The reasonable-degree-of-scientific-certainty language almost certainly was drafted by the lawyers. Scientists have no use for this phrase (outside the courtroom). Indeed, “a reasonable degree of scientific certainty” is not a defined concept in scientific disciplines or even in law. . . . It is legal mumbo jumbo derived from archaic cases in which lawyers discovered that if a medical doctor did not utter the incantation “to a reasonable degree of medical certainty,” his testimony might be excluded because doctors were not supposed to talk about mere probabilities. Modern cases usually recognize that suitably explained information about less-than-certain possibilities can be helpful in various circumstances, but experts want to (or are induced to) incant not only “medical certainty” but also “clinical certainty,” “psychological certainty,” “psychiatric certainty,” “engineering certainty,” “architectural certainty,” “ballistic certainty,” “professional certainty,” and even “forensic certainty” and “legal certainty.”

David H. Kaye, *The Double Helix and the Law of Evidence* 82 (2010).

Multiple problems abound with phrases such as “scientific certainty” or “[discipline] certainty.” These include the following:

- There is no common definition across science or within disciplines as to what threshold establishes “reasonable” certainty. Therefore, whether couched as “scientific certainty” or “[discipline] certainty,” the term is idiosyncratic to the witness.
 - A juxtaposition to the term “beyond a reasonable doubt” is appropriate here. Although not precisely quantifiable, it can be measured by comparison (it is greater than both the “preponderance” standard of 50.1% and the much higher “clear and convincing” standard) *and* has a definition as being convinced beyond having a doubt of the size that would cause a reasonable person to pause or refrain from acting in a matter of high importance.
- Use of the term “scientific” implies that the discipline is indeed a science, which is not true of all disciplines.
- Coupled with the term “reasonable,” a juror might equate it with certainty at the level demanded by the “beyond a reasonable doubt” standard of proof.
- The term invites confusion when presented with testimony expressed in probabilistic terms. How is a lay person, without either scientific or legal training, to understand an expert’s “reasonable scientific certainty” that evidence is “probably” linked to a particular source?

The susceptibility of the term to varying definitions is illustrated in *Burke v. Town of Walpole*, 405 F.3d 66 (1st Cir. 2005), a bite mark identification case. The U.S. Court of Appeals for the First Circuit had to interpret the term as used in an arrest warrant:

[W]e must assume that the magistrate who issued the arrest warrant assigned no more than the commonly accepted meaning among lawyers and judges to the term “reasonable degree of scientific certainty”—“a standard requiring a showing that the injury was *more likely than not* caused by a particular stimulus, based on the general consensus of recognized [scientific] thought.” Black’s Law Dictionary 1294 (8th ed. 2004) (defining “reasonable medical probability,” or “reasonable medical certainty,” as used in tort actions). That standard, of course, is fully consistent with the probable cause standard.

Id. at 91. The case involved a magistrate, not a jury, and it seems doubtful that a jury would understand that the term “reasonable scientific certainty” meant only “more probable than not”—that is, any probability greater than 50%. It is more likely that the jury would understand the term to mean 95% certain or perhaps “beyond a reasonable doubt.”

V. Toward a Meaningful Alternative (or Alternatives):

The Commission recognizes that recommending the abandonment of a long-used phrase is a first step and an incomplete one. The expert’s subjective certainty may be an appropriate concern in a particular case and is a factor distinct from the certainty or likelihood of the particular conclusion.

Additional work is needed in both the scientific and legal communities to identify appropriate language that may be used by experts to express conclusions and opinions to the trier of fact based on observations of evidence and data derived from evidence. Rather than use “reasonable...certainty” terminology, experts should make a statement about the examination itself, including an expression of the uncertainty in the measurement or in the data. The expert should state the bases for that opinion (e.g., the underlying information, studies, observations) and the limitations relating to the results of the examination.

Developing such a framework and language may best be undertaken through the OSAC structure or this Commission. As a first step, however, the term “reasonable degree of scientific [or discipline] certainty” has no place in the judicial process.