# FW: Forensic Science, Fed. Rs. Evid., & the PCAST Report

**From:** [redacted] (OGC) (FBI)"
**To:** [redacted] (OGC) (FBI)" [redacted] (OGC) (FBI)" [redacted]
**Cc:** "Hunt, Ted (ODAG)" <(b) (6) [redacted]
**Date** Thu, 19 Oct 2017 10 16 48 0400
**Attachments:** Ely Memo re FRE & PCAST--2017.10.18.pdf (209.58 kB)

[redacted], Ted, [redacted]:

The National Attorney's General Association sent me the latest write up on PCAST and an upcoming symposium in Bo ton on Foren ic Science The attached memo i for law enforcement only and hould not be di tributed out ide DOJ channels.

It is a good read of how FRE 702 is being targeted for amendment to conform with the guidance issued in last September' PCAST report

Very Truly Yours,

(b)(7)(E) per FBI [redacted]
neral Counsel
FBI Forensic Laboratory
2501 Inve tigation Parkway
Quantico, Virginia 22135
O: (b)(7)(E) per FBI
C: (b)(7)(E) per FBI

**From:** Amie Ely [(b) (6) [redacted] ]
**Sent:** Thursday, October 19, 2017 9:44 AM
**Subject** Forensic Science, Fed Rs Evid , & the PCAST Report

Hello:

If you are receiving this email, you either attended the CEPI Forensic Science Symposium, are on my forensic science contact list, or are associated with a state-run laboratory.

As explained at greater length in the attached document, a Symposium on Forensic Expert Testimony, *Daubert*, and Rule 702 will be held for the Federal Rules of Evidence Advisory Committee on October 27, 2017 at Boston College Law School (information here: https://orgsync.com/72125/events/1814986/occurrences/5064827).

This Symposium is, potentially, the first step in a process that could result in amendments to the Federal Rules of Evidence that single out forensic science to be treated differently from every other category of expert testimony by erecting additional barriers to admissibility that are consistent with those recommended by the President's Council of Advisers on Science and Technology ("PCAST"), in its September 2016 Report, "Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods" (the "PCAST Report").

The Advisory Committee Reporter who designed the Symposium variously describes the PCAST Report as "the jumping off point," "highly recommended reading," and "the foundation for discussion," at the Symposium, and observes that the Report "advocates a role for the Advisory Committee on Evidence Rules in regulating forensic expert testimony." As described in the attached document, the Reporter suggests language for the Advisory Committee to consider in either amending Federal Rule of Evidence 702 or drafting a new Rule that governs only forensic science.

Please do not distribute this email or the document attached to it outside of the prosecutor/ law enforcement community. If you have any questions about whether you should share these materials with a particular source, please email me.

Thank you very much,
Amie

Amie Ely
Director, NAGTRI Center for Ethics & Public Integrity
National Association of Attorneys General
1850 M Street NW, 12th Floor
Washington, DC 20036
Desk: (b) (6) [redacted]
Cell: (b) (6) [redacted]
Email: (b) (6) [redacted]

# FW: Forensic Science, Fed. Rs. Evid., & the PCAST Report

**From:** (b)(6), (b)(7)(C), (b)(7)(E) per FBI (OGC) (FBI)"
**To:** (b)(6), (b)(7)(C), (b)(7)(E) per FBI (OGC) (FBI)" (b)(6), (b)(7)(C), (b)(7)(E) per FBI, (b)(6), (b)(7)(C), (b)(7)(E) per FBI (OGC) (FBI)" (b)(6), (b)(7)(C), (b)(7)(E) per FBI
**Cc:** "Hunt, Ted (ODAG)" <(b) (6)
**Date** Thu, 19 Oct 2017 10 16 48 0400
**Attachments:** Ely Memo re FRE & PCAST--2017.10.18.pdf (209.58 kB)

(b)(6), (b)(7)(C), Ted, (b)(6), (b)(7)(

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It is a good read of how FRE 702 is being targeted for amendment to conform with the guidance issued in last September' PCAST report

Very Truly Yours,

(b)(7)(E) per FBI
neral Counsel
FBI Forensic Laboratory
2501 Inve tigation Parkway
Quantico, Virginia 22135
O: (b)(7)(E) per FBI
C: (b)(7)(E) per FBI

**From:** Amie Ely [(b) (6) ]
**Sent:** Thursday, October 19, 2017 9:44 AM
**Subject** Forensic Science, Fed Rs Evid , & the PCAST Report

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If you are receiving this email, you either attended the CEPI Forensic Science Symposium, are on my forensic science contact list, or are associated with a state-run laboratory.

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The Advisory Committee Reporter who designed the Symposium variously describes the PCAST Report as "the jumping off point," "highly recommended reading," and "the foundation for discussion," at the Symposium, and observes that the Report "advocates a role for the Advisory Committee on Evidence Rules in regulating forensic expert testimony." As described in the attached document, the Reporter suggests language for the Advisory Committee to consider in either amending Federal Rule of Evidence 702 or drafting a new Rule that governs only forensic science.

Please do not distribute this email or the document attached to it outside of the prosecutor/ law enforcement community. If you have any questions about whether you should share these materials with a particular source, please email me.

Thank you very much,
Amie

Amie Ely
Director, NAGTRI Center for Ethics & Public Integrity
National Association of Attorneys General
1850 M Street NW, 12th Floor
Washington, DC 20036
Desk: (b) (6)
Cell: (b) (6)
Email: (b) (6)

# Fwd: DNA Mixture Resource Group Meeting 14th August 10.00AM - 3.00PM EDT

**From:** [redacted] (OGC) (FBI)" [redacted]
**To:** "Hunt, Ted (ODAG) (JMD)" <[redacted]
**Date** Mon, 13 Aug 2018 13 03 06 0400
**Attachments:** NIST Scientific Foundation Review Background - DRAFT[3].docx (73.82 kB)

As discussed.

-

-------- Original message --------
From: [redacted] (LD) (FBI)" [redacted]
Date 8/13/18 11 56 AM (GMT 05 00)
To: [redacted] (LD) (FBI)" [redacted], [redacted] (LD) (FBI)" [redacted] (OGC) (FBI)" [redacted]
Fwd: DNA Mix [redacted] oup Meeting 14th August 10.00AM - 3.00PM EDT

For tomorrow's NIST MRG meeting. Haven't read it yet

Original me age
From: "Willis, Sheila (IntlAssoc)" <[redacted]>
Date: 8/9/18 3:27 PM (GMT-05:00)
To: Jack Ballantyne <[redacted]>, "[redacted] (ATF)" <[redacted]>, Jenn Breaux [redacted], Robin Cotton [redacted] Roger Frappier <[redacted]>, Bruce Heidebrecht <[redacted]>, Keith Inman <[redacted]>, "Lien, Eugene (OCME)" <[redacted]>, [redacted] (LD) (FBI)" <[redacted] ermeier-wood <[redacted], Ray Wickenhei er [redacted], Charlotte Word <[redacted]>
Cc: "Butler, John M. (Fed)" <[redacted]>, "Taylor, Melissa (Fed)" <[redacted]>, "Iyer, Hariharan K. (Fed)" <[redacted] Fed)" <[redacted] (Fed)" [redacted], "Willi , Sheila (IntlA oc)" [redacted]
Subject: DNA Mixture Resource Group Meeting 14th August 10.00AM - 3.00PM EDT

Dear Colleague ,

Attached plea e find Background Document which may be publi hed eparately a a ba i for a cientific foundation review. It will apply to the DNA mixture study and any other foundation review that may follow.

A rough draft of the agenda for our meeting next week is below together with phone in details for anyone unable to travel
To most of you who are attending, we are back in room B208 in the Genetics building close to the car park building number 227 The meeting will run from 10;00am 3;00pm EDT John will come down to the front gate at 9;30am and again at 9;45am in advance of the meeting to pick people up.

Regards.
Sheila

Subject for the agenda

- Di cu Background Document on information in a cientific foundation review
- Di cu and get feedback on principle u ed in DNA interpretation
- Review key point from the UK Regulator and the ISFG
- Review key point from Chapter 2 hi torical per pective material
- Di cu the need for tran parency and publicly available empirical performance data that demon trate claimed capabilitie and how to convey what i practical

- **NIST DNA Mixture Meeting**
  Tue, Aug 14, 2018 10 00 AM 3 00 PM EDT

**Please join my meeting from your computer, tablet or smartphone.**
(b) (6)

**You can also dial in using your phone.**
United States: (b) (6)

**Access Code:** (b) (6)

**More phone numbers**
Canada: (b) (6)
United Kingdom: (b) (6)

First GoToMeeting? Let's do a quick system check:https://link.gotomeeting.com/system-check

# Tox ULTR

**From:** "Antell, Kira M. (OLP)" <(b) (6)
**To:** "Isenberg, Alice R. (LD) (FBI)" (b)(6), (b)(7)(C), (b)(7)(E) per FBI
**Cc:** (b)(6), (b)(7)(C), (b)(7)(E) per FBI (OGC) (FBI)" (b)(6), (b)(7)(C), (b)(7)(E) per FBI, "Hunt, Ted (ODAG)" <(b) (6)
**Date** Mon, 05 Feb 2018 13 39 10 0500
**Attachments:** Toxicology_ULTR_3.5_02052018.docx (30.03 kB); Assembled Comments 071416_TOX ONLY.pdf (12 62 MB)

Hi Alice,

I mentioned I've been struggling with the Tox ULTR. I have attached my attempt at it. Look forward to hearing from your SMEs.

I am also attaching a PDF of comments we got on the Tox ULTR when we put this one out for comment in 2016. I'm interested to hear if folks think we need further edits to address them.

Thanks,
Kira

Kira Antell
Senior Counsel
Office of Legal Policy
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530
(b) (6)
(b) (6)

# DEPARTMENT OF JUSTICE
# PROPOSED UNIFORM LANGUAGE
# FOR TESTIMONY AND REPORTS
# COMMENTS RECEIVED BY JULY 8, 2016



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**Comment ID:** 0061
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** In the Proposed Language for Toxicology section there was no mention of utilizing observations of driving or observations obtained during SFST and/or DRE examinations. When combined with the toxicology results these observations can be a potentially valuable source of information in the formulation of opinion testimony in drug DUI cases. Do these omissions mean that DOJ considers that utilizing these observations is 'not approved?' Was the intent of this document to assume an examiner will only have the toxicology results available in formulating an opinion?

**Comment ID:** 0061
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** # 2 (under Statements Not Approved) is unclear. Does it mean an examiner may state an "interpretation of the effects of a drug" only for posed hypothetical scenarios, but not specifically referring to the defendant of the current drug DUI case? Was the intent of #2 to say that offering an opinion of impairment in a specific drug DUI case is never approved under any circumstances?

**Comment ID:** 0061
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** Does # 4 (under Statements Not Approved) refer solely to a drug concentration in a urine sample, in the absence of any other observations, or does it mean that regardless of any other observations available (observations of driving, observations by the officers such as SFST/DRE) the fact that urine was the matrix means that an examiner may never state an opinion of impairment in a drug DUI?

**Comment ID:** 0061
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** # 4 (under Statements Approved) is confusing. Does it mean opinion testimony (in a drug DUI case for example) is limited to the effects of the drug on people in general but the examiner must stop short of rendering an opinion of impairment in a particular drug DUI case?



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20220314-11724

# PUBLIC SUBMISSION

**As of:** July 12, 2016
**Received:** July 06, 2016
**Status:** Posted
**Posted:** July 06, 2016
**Tracking No.** 1k0-8qlq-qi3b
**Comments Due:** July 08, 2016
**Submission Type:** Web

**Docket:** DOJ-OLP-2016-0012
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0014
Toxicology_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0061
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

In the Proposed Language for Toxicology section there was no mention of utilizing observations of driving or observations obtained during SFST and/or DRE examinations. When combined with the toxicology results these observations can be a potentially valuable source of information in the formulation of opinion testimony in drug DUI cases. Do these omissions mean that DOJ considers that utilizing these observations is 'not approved?' Was the intent of this document to assume an examiner will only have the toxicology results available in formulating an opinion?

Does # 4 (under Statements Not Approved) refer solely to a drug concentration in a urine sample, in the absence of any other observations, or does it mean that regardless of any other observations available (observations of driving, observations by the officers such as SFST/DRE) the fact that urine was the matrix means that an examiner may never state an opinion of impairment in a drug DUI?

# 2 (under Statements Not Approved) is unclear. Does it mean an examiner may state an "interpretation of the effects of a drug" only for posed hypothetical scenarios, but not specifically referring to the defendant of the current drug DUI case? Was the intent of #2 to say that offering an opinion of impairment in a specific drug DUI case is never approved under any circumstances?

# 4 (under Statements Approved) is confusing. Does it mean opinion testimony (in a drug DUI case for example) is limited to the effects of the drug on people in general but the examiner must stop short of rendering an opinion of impairment in a particular drug DUI case?

**Comment ID:** 0069
**Discipline:** Overall
**Comment Category:** Nature of ULTRs
**Name/Organization:** Avis Buchanan, Public Defender Service for the District of Columbia AND Ronald Brown. LA County Public Defender
**Summary:** Guidelines do not adequately resolve issues with forensic science. It is not clear how the proposed guidelines will be reconciled with what the OSAC and PCAST will produce. The guidelines do not provide consistency in how examiners report and testify regarding their findings, i.e. every guideline states the examiner "may" state, report, or imply certain findings. The guidelines do not even suggest they should be followed or describe when they should be followed and when they may not apply.

**Comment ID:** 0069
**Discipline:** Overall
**Comment Category:** Nature of ULTRs
**Name/Organization:** Avis Buchanan, Public Defender Service for the District of Columbia AND Ronald Brown. LA County Public Defender
**Summary:** These guidelines need to address limitations as they apply to the particular discipline and require examiners to clearly state what is known and not known with respect to each before providing an opinion. Providing an opinion without first addressing estimates of uncertainty and variability; possible sources of error and error rates; and limitations in the method, data, or conclusions will result in misleading testimony.

**Comment ID:** 0069
**Discipline:** Glass Document
**Comment Category:** Nature of ULTRs
**Name/Organization:** Avis Buchanan, Public Defender Service for the District of Columbia AND Ronald Brown. LA County Public Defender
**Summary:** The document seems to permit the examiner to decide whether or not to offer probabilities. This would permit an examiner to choose not to offer a probability if the probability for example made it likely that there were many other glass fragments that shared the same physical properties and only provide a statistic when the statistic was compelling.

**Comment ID:** 0069
**Discipline:** Footwear, Tire and Latent Print Comparison
**Comment Category:** Nature of ULTRs
**Name/Organization:** Avis Buchanan, Public Defender Service for the District of Columbia AND Ronald Brown. LA County Public Defender
**Summary:** There are odd inconsistencies within these guidelines. For example, the shoe footwear and tire impression guidelines suggest the findings be reported as the opinion of the examiner while the latent print guidelines provide no such suggestion. There does not appear to be any language in the pattern impression guidelines that requires the examiner to state that the findings are based on the examiner's subjective judgments. Despite language suggesting no probability statements be made or implied, this does imply a probability.



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20220314-11726

**Comment ID:** 0069
**Discipline:** General Chemistry
**Comment Category:** Nature of ULTRs
**Name/Organization:** Avis Buchanan, Public Defender Service for the District of Columbia AND Ronald Brown. LA County Public Defender
**Summary:** This guideline fails to require an examiner explain the limitations of his or her opinion. It permits an examiner to state that his conclusion regarding the portion of a substance tested applies to entire sample when there is a "reasonable assumption of homogeneity." The guideline, however, provides no guidance for determining under what circumstances such an assumption may be made. The guideline appears to permit the use of invalidated methods for the estimation of the concentration of a chemical and fails to require the examiner to provide the uncertainly involved in the opinion. This guideline states that the examiner may not report or state an opinion about "the exact source of a chemical" but does not state what may be reported.

**Comment ID:** 0069
**Discipline:** Toxicology
**Comment Category:** Nature of ULTRs
**Name/Organization:** Avis Buchanan, Public Defender Service for the District of Columbia AND Ronald Brown. LA County Public Defender
**Summary:** This guideline allows the examiner to choose whether or not to report measurement uncertainty and whether or not to report the limitations of his or her opinion.

**Comment ID:** 0069
**Discipline:** Textile/Fiber
**Comment Category:** Nature of ULTRs
**Name/Organization:** Avis Buchanan, Public Defender Service for the District of Columbia AND Ronald Brown. LA County Public Defender
**Summary:** With respect to the first sentence, "same microscopic characteristics and optical properties," does not capture the full range of testing that should be done to conclude that the characteristics and properties are the same. The use of the phrase "a fiber selected at random" invites the fact-finder to consider the entire world of fibers – manmade and natural – that one could select at random, and the likelihood that they would share the same characteristics as the questioned fiber. The examiner cannot opine the likelihood of a "random" match given the absence of data on variability



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# PUBLIC SUBMISSION

**As of:** July 12, 2016
**Received:** July 07, 2016
**Status:** Posted
**Posted:** July 08, 2016
**Tracking No.** 1k0-8qmf-yhcx
**Comments Due:** July 08, 2016
**Submission Type:** Web

**Docket:** DOJ-OLP-2016-0012
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0069
Comment on FR Doc # N/A

## Submitter Information

**Name:** Avis Buchanan
**Organization:** Public Defender Service for the District of Columbia and the Los Angeles County Public Defender

## General Comment

See attached file(s)

## Attachments

DOJ Uniform Language Final Submission_07 07 2016



Deliberative & Pre-Decisional

THE PUBLIC DEFENDER SERVICE
for the District of Columbia

CHAMPIONS OF LIBERTY

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Rudolph Acree, Jr.
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633 Indiana Avenue, NW
Washington, DC 20004
Tel (b) (6)
TTY
Fax (202) 824-2784
www.pdsdc.org

July 5, 2016

Office of the Deputy Attorney General
Department of Justice

**Re: Docket No. OLP 157-- Proposed Uniform Language for Testimony and Reports in Forensic Science Disciplines**

To Whom it May Concern:

Thank you for providing the public with the opportunity to comment on the Department of Justice Uniform Language for Testimony and Reports. The Public Defender Service for the District of Columbia (PDS) submits the attached comments jointly with the Los Angeles County Public Defender.

PDS has been extensively litigating issues relating to forensic science evidence for many years and is committed to ensuring that forensic science evidence is presented accurately. PDS shares the concerns of many others that the way scientific testimony is presented in court often varies from examiner to examiner, from laboratory to laboratory, and from courtroom to courtroom. Also, examiners often fail to adequately explain the limitations of their conclusions to jurors and judges, hindering the ability of fact-finders to properly weigh scientific evidence. As the role of forensic science in courtrooms continues to grow, these problems will only be exacerbated.

While I appreciate that in drafting guidelines for reporting and testimony in forensic science disciplines, the Department of Justice (DOJ) recognizes these issues, I do not believe the proposed guidelines adequately resolve them. Moreover, the President's Council of Advisors on Science and Technology (PCAST) and the Organization of Scientific Areas Committees (OSAC) are also developing recommendations on reporting and testimony. While the involvement of scientists, statisticians, and researchers in developing DOJ's guidelines appears to have been limited, both PCAST and OSAC are composed of scientists who will approach drafting such guidelines with an eye towards making certain that they are scientifically valid.

I hope that DOJ seriously considers the comments of the Los Angeles County Public Defender and the Public Defender Service for the District of Columbia. If you have any questions about the comments, please feel free to contact me.

Sincerely,

Avis E. Buchanan

Avis E. Buchanan
Director

Enclosure



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**LAW OFFICES OF THE**
**LOS ANGELES COUNTY PUBLIC DEFENDER**

July 8, 2016

**RONALD L. BROWN**
PUBLIC DEFENDER

Office of the Deputy Attorney General
Department of Justice

**Re: Docket No. OLP 157-- Proposed Uniform Language for Testimony and Reports in forensic science disciplines**

To Whom it May Concern:

I would like to thank you for providing this opportunity to offer comments to the Department of Justice Uniform Language for Testimony and Reports. The comments attached to this letter are being submitted jointly by the Los Angeles County Public Defender and Public Defender Service for the District of Columbia. The Los Angeles County Public Defender's Office has a strong interest in ensuring forensic science evidence is accurately presented and that forensic examiners not mislead lay jurors regarding the strength of their opinions. I understand these guidelines as written, do not apply to state and local crime laboratories and thus, do not directly affect my office. However, the Department of Justice and in particular the Federal Bureau of Investigation has a tremendous impact on how state and local laboratories operate. It is not uncommon for state and local labs to adopt standards developed by the FBI. Thus, these guidelines may very well be adopted by the laboratories in my jurisdiction.

The lawyers in my office have been actively litigating issues surrounding forensic science evidence for many years. There continue to be serious concerns about how such testimony is presented in court and how it is reported. Consequently I am pleased the Department of Justice is attempting to draft guidelines for reporting and testimony in recognition that there is a tremendous amount of inconsistency in how such testimony is presented and that forensic examiners frequently fail to accurately describe the limitations of their opinions.

However, as will be evident by my comments, I do not believe that the process by which these guidelines were drafted nor the substance of the guidelines adequately address these issues. Furthermore, I do not believe now is the appropriate time to attempt to promulgate such guidelines when organizations such as the Organization of Scientific Areas Committees and the President's Council of Advisors on Science and Technology are in the process of developing guidelines for reporting and testimony. These organizations are made of researchers and scientists who have an interest in ensuring the guidelines adopted are scientifically supported.



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Because I understand you may not agree and choose nevertheless to move forward with these guidelines, I am also providing commentary on the individual guidelines as drafted. Should the Department of Justice choose to move forward, I strongly urge you submit the guidelines to a group of independent scientists before anything is adopted.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Ronald L. Brown
Los Angeles County Public Defender



Deliberative & Pre-Decisional

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Comments by the Public Defender Service for the District of Columbia
and the Los Angeles County Public Defender on Department of Justice Proposed Uniform Language for Testimony and Reports

I. General Comments

1. While the Public Defender Service for the District of Columbia and the Los Angeles County Public Defender commend the Department of Justice (DOJ) for recognizing the real need for standards governing the reporting and testimony of forensic science examiners, the process by which DOJ is attempting to promulgate such guidelines is troubling. These guidelines are intended to guide forensic scientists and prevent them from testifying beyond the limits of the science. However, instead of convening a panel of independent experts to vet the proposed standards, DOJ is simply requesting the public at large, many of whom presumably have no scientific background, provide comments. DOJ suggests that this process is intended to constitute a peer review of the guidelines. However, this is far from what actual scientists consider peer review.
2. With no identified author, these proposed guidelines, in particular those related to the comparison disciplines, appear not to have been drafted or even vetted by statisticians or research scientists. This practice of developing guidelines in secret and without the input of statisticians or research scientists is yet another failure of the FBI to engage openly with the scientific community before making "scientific" claims. This practice is inconsistent with sound scientific practices and delays any advances the FBI might make toward reaching scientifically defensible language. We expect these proposed guidelines will receive criticism from the greater scientific community, though we would note that simply posting them on regulations.gov and waiting for comment is hardly a serious effort to engage with the scientific community.
3. DOJ is disseminating these guidelines at the same time the Organization of Scientific Areas Committees (OSAC) is struggling to produce standards for report writing and testifying within the various disciplines. The OSAC standards will be discipline-specific and, we hope, address the technical merit of the proposed testimony. In addition, the President's Council of Advisors on Science and Technology (PCAST) is working on a report that will address how forensic science testimony is presented and will presumably take a more restrictive approach than the DOJ guidelines. It is not clear how the proposed guidelines will be reconciled with what the OSAC and PCAST will produce.
4. The purpose of these guidelines is not entirely clear from the preamble; one purpose should be to provide some consistency in how examiners report and testify regarding their findings. Unfortunately, these guidelines appear to allow the examiner to disregard them entirely: every guideline states the examiner "may" state, report, or imply certain findings. The guidelines do not even suggest they should be followed or describe when they should be followed and when they may not apply.
5. The guidelines relating to disciplines that appear to have greater scientific underpinnings, such as toxicology, chemistry and glass comparison allow examiners report and testify


Deliberative & Pre-Decisional

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regarding measurement uncertainty and the limitations of their opinions, while the guidelines relating to disciplines with significantly less of a foundation in scientific research, such as shoeprint and fingerprint comparison, don't even address estimates of uncertainty and variability; possible sources of error and error rates; or limitations in the method, data, or conclusions. These guidelines need to address the above-described limitations as they apply to the particular discipline and require examiners to clearly state what is known and not known with respect to each before providing an opinion. Providing an opinion without first addressing estimates of uncertainty and variability; possible sources of error and error rates; and limitations in the method, data, or conclusions will result in misleading testimony.

II. Individual Documents

A. Glass Document

The document seems to permit the examiner to decide whether or not to offer probabilities. This would permit an examiner to choose not to offer a probability if the probability for example made it likely that there were many other glass fragments that shared the same physical properties and only provide a statistic when the statistic was compelling.

B. Footwear, Tire and Latent Print Comparison

1. There are odd inconsistencies within these guidelines. For example, the shoe footwear and tire impression guidelines suggest the findings be reported as the opinion of the examiner while the latent print guidelines provide no such suggestion.
2. There does not appear to be any language in the pattern impression guidelines that requires the examiner to state that the findings are based on the examiner's subjective judgments.
3. It is troubling that these guidelines permit footwear, tire impression, and latent print examiners to state the examiner "would not expect to find that same combination (arrangement) of features repeated in another source" when there is no scientific basis for such a statement. Indeed, despite language suggesting no probability statements be made or implied, this does imply a probability. Below is an example of how this language might be presented in the courtroom.

Q. So let's be really clear. You believe that you—the science—you are—there's a—you are scientifically validated to testify that one person is the source of a fingerprint?
A. Yes.
Q. But you're not allowed to say to the exclusion of all others?
A. Correct.
Q. But when you say that one person is the source of the fingerprint, that's what you're saying.
A. No.
Q. What is the difference between one person being the source of the fingerprint and to the exclusion of all others?
A. So basically what I'm saying is that I've looked at this print, this latent print. I've looked at the standard. And the amount of information I've seen in agreement and the lack of


Deliberative & Pre-Decisional

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disagreement has led me to believe that they come from the same source. Now, because I have not compared this latent print to everyone else that ever lived, lived, will live, I cannot unequivocally state that there isn't a possibility, however remote, that somebody out there in the whole wide universe ever, might not have a fingerprint or a fingertip that could leave behind an impression that was similar enough to the latent print that I have that they could be easily confused. So I'm leaving open the door for that small theoretical possibility that somebody else could have a similar enough print to create confusion. . . . (Trial Transcript, State v. Doe, 2010, pp. 120–121).11

A lay audience will surely conclude this testimony suggests the examiner is using a scientifically validated method to determine that the latent and the source are one in the same and that all others cannot be excluded as the source of the latent print.

As mentioned above, this guideline does not offer adequate guidance on how to present the strength or limitations of conclusions. While the guidelines indicate that absolute or numerically-calculated statements of certainty are impermissible, they fail to describe how examiners should address certainty. Without addressing uncertainty, the guideline does not adequately improve the potential for misleading testimony.

C. General Chemistry

This guideline fails to require an examiner explain the limitations of his or her opinion. In addition, it permits an examiner to state that his conclusion regarding the portion of a substance tested applies to entire sample when there is a "reasonable assumption of homogeneity." The guideline, however, provides no guidance for determining under what circumstances such an assumption may be made. Presumably, the assumption would apply when a sampling plan was employed, but it is difficult to tell if that is what was intended. Further, the guideline does not require the examiner to state the limitations of that assumption. The guideline appears to permit the use of unvalidated methods for the estimation of the concentration of a chemical and fails to require the examiner to provide the uncertainly involved in the opinion. This guideline states that the examiner may not report or state an opinion about "the exact source of a chemical" but does not state what may be reported.

D. Toxicology

This guideline allows the examiner to choose whether or not to report measurement uncertainty and whether or not to report the limitations of his or her opinion.

E. Textile/Fiber

With respect to the first sentence, "same microscopic characteristics and optical properties," does not capture the full range of testing that should be done to conclude that the characteristics and properties are the same. This seems to invite a less robust, "I know it



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when I see it," subjectivity despite the chemical make up of synthetic fibers and dyes, and the tools available to do specialized testing.

But most troubling is the fourth sentence. Following the correct statement in the third sentence ("A fiber association is not a means of positive identification and the number of possible sources for a specific fiber is unknown."), it states: "However, due to the variability in manufacturing, dyeing, and consumer use, one would not expect to encounter a fiber selected at random to be consistent with a particular source."

This sentence invites a lay juror to speculate that the likelihood of a "random" match is very low (one would not expect it) but how low? - yet this is exactly the issue that the examiner cannot opine on given the absence of data on variability.

The use of the phrase "a fiber selected at random" also invites the fact-finder to consider the entire world of fibers – manmade and natural – that one could select at random, and the likelihood that they would share the same characteristics as the questioned fiber. Even with the entire world of fiber as the starting point, some fibers are so ubiquitous that the chance of a random match might be highly likely. Douglas Deedrick makes both points in the July 2000 FBI Forensic Science Communications – that the world is the starting point (which mistakenly assumes all fibers are randomly distributed throughout the world), but that even within it, white cotton and blue denim are too prevalent to be meaningful. He writes: "Once a particular fiber of a certain type, shape, and color is produced and becomes part of the fabric, it occupies an extremely small portion of the fiber/fabric population. Exceptions to this would be white cotton fibers and blue cotton fibers like those comprising blue jeans."

"Variability in consumer use" might also contribute to the likelihood of a random match, rather than support the opinion that one would not expect to see it. Think, for instance, of the fibers used to create Cleveland Cavaliers jerseys if the relevant time for "consumer use" was after Game 7 of the 2016 NBA Finals.

Moreover, other factors than the variability in manufacturing, dyeing, and consumer use might increase the likelihood that a match was random, rather than decrease it. For instance, the permitted testimony completely disregards the results of experiments on persistence. If two weeks have passed while a garment is in heavy use, the chance that a fiber has remained on it from the crime scene is reduced to almost zero. Yet the permitted opinion does not account for this.

All in all, in either purpose or effect, the fourth sentence is problematic. It imports the notion that one can express a view on the probability of a random match – one would not expect to see one – absent any data from which such an opinion can be drawn.


Deliberative & Pre-Decisional

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**Comment ID:** 0067
**Discipline:** Latent Prints
**Comment Category:** Nature of ULTRs, Language
**Name/Organization:** Friction Ridge Subcommittee, OSAC
**Summary:** Add a statement that this is living document; revise disclaimer so DOJ is not claiming scientific validity; In "state or imply" remove word "imply"; "Inconclusive" is incomplete and does not consider the degree to which the friction skin information is in agreement or disagreement; in identification section, replace the word "determination" with "decision; should not indefinitely forbid numerical calculations; remove several vague or unsubstantiated comments from supporting documentation.



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**Comment On:** DOJ-OLP-2016-0012-0006
Gen Chem_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0070
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

"5. The examiner may report and/or state the weight or volume of a substance which was examined. The weight or volume reported will include an associated estimated measurement uncertainty and confidence level. In instances where both the weight and volume are reported for a substance, an associated estimated measurement uncertainty and confidence level is only necessary for one of the reported measurements (unless the weight and volume are being used in combination to calculate and report the density of the substance)."

Specifically, "The weight or volume reported will include an associated estimated measurement uncertainty and confidence level." The amount of a substance for qualitative analyses (identification only, not purity) shouldn't require a measurement uncertainty (MU). For qualitative analyses, the number reported is the amount of total material, NOT the amount of controlled substance, and therefore doesn't necessitate an MU. Furthermore, this MU is most greatly influenced by how much substance you can actually get out of the container- black tar heroin tends to be sticky and crystalline/powder substances tend to stick to containers via static. Until MU can account for getting substances out of containers (and how much material is left in the container), MUs for qualitative analyses don't have enough worth to make them required.


Deliberative & Pre-Decisional

**Comment ID:** 0071
**Discipline:** Footwear and Tire
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** Uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence.

**Comment ID:** 0071
**Discipline:** Footwear and Tire
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009).[2] The current draft should be rejected, and experts in forensic inference and statistics should be invited to help write a new draft.

[2] Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0004
Footwear Tiretread_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0071
Comment on FR Doc # N/A

## Submitter Information

**Name:** Geoffrey Stewart Morrison
**Address:** Canada,
**Email:** (b) (6)

## General Comment

The proposed uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence. This is also the position of the European Network of Forensic Science Institutes (Willis et al, 2015). The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009). I recommend that the current draft be rejected, and experts in forensic inference and statistics be invited to help write a new draft.

References:
Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.
Willis, S.M., McKenna, L., McDermott, S., O'Donell, G., Barrett, A., Rasmusson, B., Nordgaard, A., Berger, C.E.H., Sjerps, M.J., Lucena-Molina, J., Zadora, G., Aitken, C.C.G., Lunt, L., Champod, C., Biedermann, A., Hicks, T.N., Taroni, F. (2015). ENFSI guideline for evaluative reporting in forensic science. European Network of Forensic Science Institutes.



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**Comment ID:** 0072
**Discipline:** Gen. Chemistry
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** Uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence.

**Comment ID:** 0072
**Discipline:** Gen. Chemistry
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009).[3] The current draft should be rejected, and experts in forensic inference and statistics should be invited to help write a new draft.

[3] Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.



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**Comment On:** DOJ-OLP-2016-0012-0006
Gen Chem_pULTR_05252016

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Comment on FR Doc # N/A

## Submitter Information

**Name:** Geoffrey Stewart Morrison
**Address:** Canada,
**Email:** (b) (6)

## General Comment

The proposed uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence. This is also the position of the European Network of Forensic Science Institutes (Willis et al, 2015). The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009). I recommend that the current draft be rejected, and experts in forensic inference and statistics be invited to help write a new draft.

References:
Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.
Willis, S.M., McKenna, L., McDermott, S., O'Donell, G., Barrett, A., Rasmusson, B., Nordgaard, A., Berger, C.E.H., Sjerps, M.J., Lucena-Molina, J., Zadora, G., Aitken, C.C.G., Lunt, L., Champod, C., Biedermann, A., Hicks, T.N., Taroni, F. (2015). ENFSI guideline for evaluative reporting in forensic science. European Network of Forensic Science Institutes.



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**Comment ID:** 0073
**Discipline:** Toxicology
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** Uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence.

**Comment ID:** 0073
**Discipline:** Toxicology
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009).[4] The current draft should be rejected, and experts in forensic inference and statistics should be invited to help write a new draft.

[4] Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.



e8c99271-a235-4c1b-b11f-92a714e0792a
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Toxicology_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0073
Comment on FR Doc # N/A

## Submitter Information

**Name:** Geoffrey Stewart Morrison
**Address:** Canada,
**Email:** (b) (6)

## General Comment

The proposed uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence. This is also the position of the European Network of Forensic Science Institutes (Willis et al, 2015). The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009). I recommend that the current draft be rejected, and experts in forensic inference and statistics be invited to help write a new draft.

References:
Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.
Willis, S.M., McKenna, L., McDermott, S., O'Donell, G., Barrett, A., Rasmusson, B., Nordgaard, A., Berger, C.E.H., Sjerps, M.J., Lucena-Molina, J., Zadora, G., Aitken, C.C.G., Lunt, L., Champod, C., Biedermann, A., Hicks, T.N., Taroni, F. (2015). ENFSI guideline for evaluative reporting in forensic science. European Network of Forensic Science Institutes.



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**Comment ID:** 0074
**Discipline:** Latent Prints
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** Uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence.

**Comment ID:** 0074
**Discipline:** Latent Prints
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009).[5] The current draft should be rejected, and experts in forensic inference and statistics should be invited to help write a new draft.

[5] Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.



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**Comment On:** DOJ-OLP-2016-0012-0010
LatentPrint_pULTR_05252016

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Comment on FR Doc # N/A

## Submitter Information

**Name:** Geoffrey Stewart Morrison
**Address:** Canada,
**Email:** (b) (6)

## General Comment

The proposed uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence. This is also the position of the European Network of Forensic Science Institutes (Willis et al, 2015). The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009). I recommend that the current draft be rejected, and experts in forensic inference and statistics be invited to help write a new draft.

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Willis, S.M., McKenna, L., McDermott, S., O'Donell, G., Barrett, A., Rasmusson, B., Nordgaard, A., Berger, C.E.H., Sjerps, M.J., Lucena-Molina, J., Zadora, G., Aitken, C.C.G., Lunt, L., Champod, C., Biedermann, A., Hicks, T.N., Taroni, F. (2015). ENFSI guideline for evaluative reporting in forensic science. European Network of Forensic Science Institutes.



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**Comment ID:** 0075
**Discipline:** Fiber
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** Uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence.

**Comment ID:** 0075
**Discipline:** Fiber
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009).[6] The current draft should be rejected, and experts in forensic inference and statistics should be invited to help write a new draft.

[6] Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.



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**Comment On:** DOJ-OLP-2016-0012-0002
Fiber_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0075
Comment on FR Doc # N/A

## Submitter Information

**Name:** Geoffrey Stewart Morrison
**Address:** Canada,
**Email:** (b) (6)

## General Comment

The proposed uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence. This is also the position of the European Network of Forensic Science Institutes (Willis et al, 2015). The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009). I recommend that the current draft be rejected, and experts in forensic inference and statistics be invited to help write a new draft.

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Willis, S.M., McKenna, L., McDermott, S., O'Donell, G., Barrett, A., Rasmusson, B., Nordgaard, A., Berger, C.E.H., Sjerps, M.J., Lucena-Molina, J., Zadora, G., Aitken, C.C.G., Lunt, L., Champod, C., Biedermann, A., Hicks, T.N., Taroni, F. (2015). ENFSI guideline for evaluative reporting in forensic science. European Network of Forensic Science Institutes.



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**Comment ID:** 0076
**Discipline:** Glass
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** Uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence.

**Comment ID:** 0076
**Discipline:** Glass
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009).[7] The current draft should be rejected, and experts in forensic inference and statistics should be invited to help write a new draft.

[7] Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.



e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11748

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Glass_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0076
Comment on FR Doc # N/A

## Submitter Information

**Name:** Geoffrey Stewart Morrison
**Address:** Canada,
**Email:** (b) (6)

## General Comment

The proposed uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence. This is also the position of the European Network of Forensic Science Institutes (Willis et al, 2015). The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009). I recommend that the current draft be rejected, and experts in forensic inference and statistics be invited to help write a new draft.

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Willis, S.M., McKenna, L., McDermott, S., O'Donell, G., Barrett, A., Rasmusson, B., Nordgaard, A., Berger, C.E.H., Sjerps, M.J., Lucena-Molina, J., Zadora, G., Aitken, C.C.G., Lunt, L., Champod, C., Biedermann, A., Hicks, T.N., Taroni, F. (2015). ENFSI guideline for evaluative reporting in forensic science. European Network of Forensic Science Institutes.



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**Comment ID:** 0077
**Discipline:** Serology
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** Uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence.

**Comment ID:** 0077
**Discipline:** Serology
**Comment Category:** Statistical Validity
**Name/Organization:** Geoffrey Stewart Morrison
**Summary:** The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009).[8] The current draft should be rejected, and experts in forensic inference and statistics should be invited to help write a new draft.

[8] Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0012
Serology_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0077
Comment on FR Doc # N/A

## Submitter Information

**Name:** Geoffrey Stewart Morrison
**Address:** Canada,
**Email:** (b) (6)

## General Comment

The proposed uniform language is inconsistent with the consensus among the majority of those specializing in forensic inference and statistics (for example, those who attend and present at the International Conference on Forensic Inference and Statistics) that the likelihood ratio framework is the correct framework for the evaluation and the expression of strength of forensic evidence. This is also the position of the European Network of Forensic Science Institutes (Willis et al, 2015). The forensic practitioner must evaluate the probability of the evidence if the prosecution hypothesis were true versus the probability of the evidence if the alternative hypothesis were true. The forensic practitioner cannot logically express a posterior probability, and giving the probability of the evidence under only one of the hypotheses can be highly misleading. Vocabulary such as "identification", "inclusion", "exclusion", "elimination", "consistent with", "could have", etc. is highly problematic, as explained in Jackson (2009). I recommend that the current draft be rejected, and experts in forensic inference and statistics be invited to help write a new draft.

References:
Jackson, G. (2009). Understanding forensic science opinions. Ch. 16 (pp. 419-445) in Fraser, J., & Williams, R. (Eds.), Handbook of Forensic Science. Cullompton, UK: Willan.
Willis, S.M., McKenna, L., McDermott, S., O'Donell, G., Barrett, A., Rasmusson, B., Nordgaard, A., Berger, C.E.H., Sjerps, M.J., Lucena-Molina, J., Zadora, G., Aitken, C.C.G., Lunt, L., Champod, C., Biedermann, A., Hicks, T.N., Taroni, F. (2015). ENFSI guideline for evaluative reporting in forensic science. European Network of Forensic Science Institutes.



e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11751

**Comment ID:** 0078
**Discipline:** Glass
**Comment Category:** Language
**Name/Organization:** Douglas DeGaetano
**Summary:** Should define “fragments” and “particles”. Should allow conclusions in paragraphs 2 and 3 to be drawn on basis of both fragments and particles, not just fragments.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0009
Glass_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0078
Comment on FR Doc # N/A

## Submitter Information

**Name:** Douglas DeGaetano

## General Comment

Pertaining to the proposed uniform language for testimony and reports for the forensic glass discipline. This document does not give a definition for glass "fragments" or glass "particles". If by "fragments" you are referring to glass that has both manufactured surfaces, like a "dice" then the document as written would only apply to a very small number of actual case scenarios. Typically, glass recovered from a suspect's clothing is in the form of minute "particles" which do not exhibit both manufactured surfaces. With these types of particles it is not possible to measure the full range of physical characteristics and/or "chemical" (elemental) composition. On particles, the refractive index is what is typically measured and compared to the known source.
In the current document (paragraphs 2 and 3) associated conclusions are based on glass "fragments". The only conclusion allowed for glass particles is in paragraph 4 which states that the possible source of broken glass cannot be determined. This is contrary to current case scenarios where recovered glass particles that have a refractive index consistent with the known source would fall under the conclusion described in paragraph 3 of the current document.
A suggested correction would be to indicate "fragments/particles" throughout this document.



Deliberative & Pre-Decisional

**Comment ID:** 0079
**Discipline:** Latent print
**Comment Category:** Language
**Name/Organization:** David Banks
**Summary:** Proposed guidelines do not adequately address error rates. In the discussion of "Absolute or Numerical Certainty," in the proposed latent print standard, the analyst is prohibited from providing a numerically calculated statement of uncertainty.

**Comment ID:** 0079
**Discipline:** Glass
**Comment Category:** Language
**Name/Organization:** David Banks
**Summary:** The second part of the "Statements Approved for Use in Forensic Glass Comparison Testimony" works because it specifically allows conclusions to include probabilities based on appropriate databases or documented frequencies.

**Comment ID:** 0079
**Discipline:** Footwear and Tire; Fiber
**Comment Category:** Language
**Name/Organization:** David Banks
**Summary:** The examiner may not state a numerical value or percentage regarding the error rate. As noted above for the latent print standard, one should be allowed to report (at the very least) the results of double blind proficiency tests for comparable cases.

**Comment ID:** 0079
**Discipline:** Serology
**Comment Category:** Language
**Name/Organization:** David Banks
**Summary:** The statement that “the analytical processes and procedures used to support serology tastings do not have a calculable error rate due to the unpredictability of human error” is wrong. There is information on the probability that humans will make certain kinds of errors, and there is no noological barrier to estimating those error rates in this context.



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**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0079
Comment on FR Doc # N/A

## Submitter Information

**Name:** David Banks
**Address:**
Dept. of Statistical Science, Box 90251
Duke University
Durham, NC, 27708
**Email:** (b) (6)
**Phone:** (b) (6)

## General Comment

As a member of the Statistics Task Group I am pleased to see progress in the discussion of quantified uncertainty in many of the proposed revised standards. But I have a few concerns.

1. Judges are the gatekeepers in permitting expert testimony, but the Daubert standard specifically directs them to weigh five tests, and the implication is that all of the tests should be satisfied. These tests are:

a. Is the theory or technique falsifiable, refutable and/or testable?
b. Has the methodology been subjected to peer review and publication?
c. What is the known or potential error rate?
d. Are there standards and controls (where appropriate)?
e. Is the theory or technique generally accepted by the scientific community?

The proposed standards address, to some extent, conditions a,b,d,e. Condition c (error rates) is less satisfactory. And c is important---it makes a big difference if the expert's testimony has one chance if five of being wrong, or one chance in ten thousand.

I recognize that many forensic scientists feel that it is difficult to determine the chance of incorrectly declaring a match and the chance of incorrectly overlooking a match, but I believe that this difficulty has been overstated. People seem to get bogged down in debates over likelihood ratio tests and Bayesian priors, but much can be gained from simpler methods. For example, most training protocols involve proficiency testing. If these protocols were slightly modified to ensure their representativeness of actual case work (i.e., no easier nor more


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difficult, on average, than actual cases) and to enable double-blind testing in realistic situations, then it is possible to estimate false positives and false negative error rates. The fact that every situation is unique does not imply that one cannot calculate generalizable error rates. (Richard Feynman, in late stage cancer, asked his physician what was the chance that he had anothersix months. The doctor said it was impossible to answer, because every patient was unique. Feynman replied, correctly, that it was still completely possible to answer the question.)

2. In the discussion of "Absolute or Numerical Certainty," in the proposed latent print standard, I am concerned that the analyst is prohibited from providing a numerically calculated statement of uncertainty. For example, if an expert examiner were presented with 20 pairs of prints (some from same, some from different sources), and made the correct call for 19 of them and an incorrect call for one of them, then the analyst should be allowed to report this as a relevant error rate. (This assumes that the 20 matching tests are comparable in quality and level of difficulty to the case for which testimony is offered.)

3. In the proposed glass standard, I applaud the second part of the "Statements Approved for Use in Forensic Glass Comparison Testimony" as it specifically allows conclusions to include probabilities based on appropriate databases or documented frequencies.

4. In the proposed standard on footwear and tire impressions, I am concerned that the examiner may not state a numerical value or percentage regarding the error rate. As noted above for the latent print standard, one should be allowed to report (at the very least) the results of double blind proficiency tests for comparable cases. Similar concerns arise in the textile fiber standard.

5. The serology standard says that "the analytical processes and procedures used to support serology testing do not have
a calculable error rate due to the unpredictability of human error." This is a serious misunderstanding. We have excellent information on the probability that humans will make certain kinds of errors, and there is no noological barrier to estimating those error rates in this context.

6. I applaud the standard on general chemistry that indicates the importance of an appropriate sampling plan in order to make inferences about inhomogenous materials.



e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11756

**Comment ID:** 0080
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** Inquires whether under item two of "statements not approved" an examiner would be able to speak to what is generally known about how concentrations impact/ impair someone, without specifically identifying how any one individual would respond to a dose



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**Comment On:** DOJ-OLP-2016-0012-0014
Toxicology_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0080
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

Statements not approved...
2. An examiner may not report or state an opinion that suggests his/her interpretation of the effects of a drug or poison can be specified to the individual whose sample was tested.

Just for clarification, would an examiner be able to speak to what is generally known about how concentrations impact/ impair someone, without specifically identifying how any ONE individual would respond to a dose?



Deliberative & Pre-Decisional

**Comment ID:** 0081
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Christine Moore, Past President, Society of Hair Testing
**Summary:** Statements #8 is far too simplistic; it implies that all drugs are incorporated in the same way and all travel along a hair shaft in a linear manner with no potential differentiation caused by hair pigmentation, treatments (dyeing, bleaching), frequency of washing, age, or other factors which influence drug incorporation into hair. The reliability of segmental analysis is not widely accepted by hair analysts and this should not be an approved statement.

**Comment ID:** 0081
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Christine Moore, Past President, Society of Hair Testing
**Summary:** Statement #10 and Statement #3 are largely inaccurate, not supported by any scientific data and in the current state of the science could only possibly be applied reliably to the detection of THC-COOH. The use of wash procedures to differentiate exposure from ingestion is still controversial; there are no validated wash procedures which have been generally accepted by the scientific community. The published literature (on both sides of this argument) is almost exclusively concerned with cocaine – there is minimal if any literature to support this concept for any other drug. To date the only metabolite which falls under the “unique metabolite” scenario is THC-COOH (metabolite of cannabis); metabolites of other drugs can be formed outside the body so are not uniquely associated with ingestion.



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**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0081
Comment on FR Doc # N/A

## Submitter Information

**Name:** Christine Moore
**Address:**
829 Towne Center Drive
Pomona, CA, 91767
**Email:** (b) (6)
**Phone:** (b) (6)

## General Comment

See attached file(s)

## Attachments

Proposed Uniform Language Discipline Reviewed



Deliberative & Pre-Decisional

July 7, 2016

| | |
|---|---|
| Proposed Uniform Language Discipline Reviewed: | **Forensic Toxicology** |
| Reviewer Name**:** | **Christine Moore, PhD, DSc, DABCC** |
| Relevant Professional Experience: | **Past President: Society of Hair Testing** |

As a former director of a hair testing laboratory, Past President of the Society of Forensic Toxicologists, Past President of the Society of Hair Testing, Drug Testing Advisory Board (DTAB) member and a Committee Chair on the current SAMHSA Hair Testing group I feel I am qualified to comment on statements #8, #10 in the "approved" list and statement #3 in the "not approved" list. None of these statements (#8 and #10 approved; #3 not approved) are supported by scientific research and they do not reflect the consensus in the scientific community.

*Statement #8: The examiner may report and/or state the results of segmental analyses of hair samples and interpret those findings based on an average growth rate of 1 cm/month provided he/she acknowledges variation in inter-individual growth rates and assumes proper specimen collection.*

**Comment: Drugs enter the hair through various mechanisms including blood, sweat, and sebum as well as through environmental contamination. Segmental analysis can be problematic for drugs which are smoked; drugs are deposited on the head and their detection in a specific segment has no correlation to the time of ingestion. It is possible that drugs which are orally ingested can be followed along the hair shaft fairly consistently, but this does not apply to all drugs. The statement is far too simplistic; it implies that all drugs are incorporated in the same way and all travel along a hair shaft in a linear manner with no potential differentiation caused by hair pigmentation, treatments (dyeing, bleaching), frequency of washing, age, or other factors which influence drug incorporation into hair. The reliability of segmental analysis is not widely accepted by hair analysts and this should not be an approved statement.**

*Statement #10: The examiner may report and/or state that hair findings indicate the ingestion of a drug or poison if validated wash procedures have been performed that can differentiate between exposure and ingestion and/or if a metabolite that is uniquely associated with ingestion has been identified in the sample*
**and**
*Statement #3: An examiner may not report or state an opinion that a drug or poison finding in hair is proof of ingestion of the drug or poison unless a metabolite that is unique to ingestion is also identified and/or validated wash procedures have been performed that can differentiate between exposure and ingestion.*

**Comment: The use of wash procedures to differentiate exposure from ingestion is still controversial; there are no validated wash procedures which have been generally accepted by the scientific community. The published literature (on both sides of this argument) is almost exclusively concerned with cocaine – there is minimal if any literature to support this concept for any other drug. To date the only metabolite which falls under the "unique metabolite" scenario is THC-COOH (metabolite of cannabis); metabolites of other drugs can be formed outside the body so are not uniquely associated with ingestion. The statement(s) are largely inaccurate, not supported by any scientific data and in the current state of the science could only possibly be applied reliably to the detection of THC-COOH.**


Deliberative & Pre-Decisional

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**Comment ID:** 0082
**Discipline:** Toxicology
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** Overall favorable. Question as to whether “drug” includes alcohol.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0015
Toxicology_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0082
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

Our Toxicology Technical Leaders' opinions on this document are largely favorable. The proposed language for use in laboratory reports and expert witness testimony reflects the language used by the MN BCA laboratory toxicology section. Our comments are suggestions for clarification of the terms "toxicology evidence" and "drug":
The scope includes the forensic examination of toxicology evidence. It is assumed that this document would not apply to testing of breath samples for alcohol, however, this is not clear. Our Laboratory's accreditation in the field of Forensic Science Breath Alcohol Calibration is for the discipline of toxicology and the category of calibration of breath alcohol measuring instruments. It would not be unreasonable to construe a breath sample as toxicology evidence. This could be an issue in court because point 9 in "Statements Approved for Toxicology Testimony and/or Laboratory Reports" states that retrograde extrapolation can be reported or stated for ethanol concentration in blood. It is also scientifically valid (and not uncommon) to state an extrapolated ethanol concentration from a breath alcohol measurement.

Point 4 in "Statements Not Approved for Toxicology Testimony and/or Laboratory Reports" states that an examiner may not report or state an opinion that an individual was impaired based on a drug concentration in urine. We agree with this statement within the context of drug testing, however, based on data published in peer reviewed literature a scientist may testify that a urine alcohol level would correlate to a blood alcohol level that would be sufficiently high to indicate some degree of impairment at or prior to the time of the urine sample collection. Does "drug" include alcohol?



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**Comment ID:** 0083
**Discipline:** SD Toxicology
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** Whether alcohol is included with drugs and other toxic substances or poisons is not explicitly stated in this document. If the commentary regarding confirmation techniques applies to alcohol testing in blood and urine then it conflicts with the procedures of the BCA Laboratory toxicology section.



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**Comment On:** DOJ-OLP-2016-0012-0015
Toxicology_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0083
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

The Theory of Forensic Toxicology Examinations section includes the statement that "in cases of suspected driving under the influence of alcohol, breath may be collected and analyzed for the presence of ethanol". This statement could be construed to include breath samples within the scope of toxicology evidence (as discussed above) with negative ramifications for the acceptance of retrograde extrapolation of breath alcohol measurements.

Whether alcohol is included with drugs and other toxic substances or poisons is not explicitly stated in this document. If the commentary regarding confirmation techniques applies to alcohol testing in blood and urine then it conflicts with the procedures of the BCA Laboratory toxicology section. There is a multitude of data published in peer reviewed literature that supports the use of GC without mass spectrometry to confirm the identity and quantitation of ethanol and volatiles in toxicology samples. The SOFT / AAFS Forensic Toxicology Laboratory Guidelines and the ABFT Forensic Toxicology Accreditation Manual include the following statements. The highlighted portions are consistent with the procedure used in the BCA Laboratory toxicology section:

SOFT/AAFS: For ethanol, although false positives are unlikely, confirmation using a second analytical system is encouraged. One approach is to confirm detection of ethanol by GC using an enzymatic assay. Alternatively, confirmation using a second GC column is acceptable IF the second results in significant changes in retention time AND change in elution order of at least some of the common volatiles (e.g. ethanol, isopropanol, acetone). The second analysis should be performed on a separate aliquot of the specimen, or an alternate specimen from the same case.
ABFT: Nonetheless, use of a second confirmatory technique is encouraged for all analytes, including ethanol (e.g., GC dual-column analysis, enzymatic, or colorimetric) and carbon monoxide (e.g., visible spectrophotometry, palladium chloride or GC).
If only a single specimen (e.g. blood) is available on a specific case, a separate repeat analysis must be performed for confirmation of a positive result.
Effective January 1, 2014 ethanol must be determined using a 2-column GC method or alternate method of



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equivalent or greater forensic strength.
Note: SWGTOX has not established standards for analytical procedures so the SOFT/AAFS guidelines and the ABFT Accreditation requirements are referenced herein to provide context of the views of the Forensic Toxicology community.


Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11766

**Comment ID:** 0084
**Discipline:** Overall
**Comment Category:** Language, Underlying Science
**Name/Organization:** Thomas Holland
**Summary:** The accompanying explanation states that "Identification" is one in which the examiner "would not expect to find [the combination of features] . . . in another source," but that "exclusion of all others can never be empirically proven." This would imply a probability in excess of 99% but less than 100%. (or some similar number, such as >99.5% or 99.9%).

**Comment ID:** 0084
**Discipline:** Overall
**Comment Category:** Language, Underlying Science
**Name/Organization:** Thomas Holland
**Summary:** The accompanying explanation states that "Probably Made" is one in which "it is unlikely that another shoe/tire is the source," but where an "identification" cannot be made. Theoretically, this would imply a probability in excess of 50% but less than 99%. Even assuming that the intent is to weight it higher, for example >60% but <99%, a de facto weight has been attached.

**Comment ID:** 0084
**Discipline:** Overall
**Comment Category:** Language, Underlying Science
**Name/Organization:** Thomas Holland
**Summary:** The accompanying explanation states that "Could Have Made" is one in which there are similar class characteristics. This invites the inference of a probability somewhere in a grey zone between (for example) 45%-55%, or perhaps 40%-60%.

**Comment ID:** 0084
**Discipline:** Overall
**Comment Category:** Language, Underlying Science
**Name/Organization:** Thomas Holland
**Summary:** The statement that the examiner “could not determine” whether a match exists or not is functionally the same as the “Unsuitable” category.

**Comment ID:** 0084
**Discipline:** Overall
**Comment Category:** Language, Underlying Science
**Name/Organization:** Thomas Holland
**Summary:** The accompanying explanation states that "Indications Did Not Make" is the antimere of "Probably Made." Theoretically, this would imply a probability somewhere lower than 50%, or conservatively, <40% but >1%. The accompanying explanation states that "Elimination" is the antimere of "Identification." This would imply a probability less than 1% (or perhaps 0.5% or 0.9%).



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Footwear Tiretread_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0084
Comment on FR Doc # N/A

## Submitter Information

**Name:** Thomas Holland

## General Comment

The standardization of report and testimony language is a major step forward for the forensic science profession.

It is encouraging that many of the forensic science fields are trending away from the use of statistical (often pseudo-statistical) weighting of observations and conclusions. Too often in the past, examinersmany of whom had little training in, and even less understanding of, statisticsemployed statements of probability that had no grounding in the science.
Unfortunately, old habits die hard and several of the proposed language guidelines (e.g., Footwear and Tire Impression) have eliminated overt statements of probability only to substitute statements that carry an inferred probability.

For example, the options available to a Footwear and Tire Impression analyst are:
1. Identification
2. Probably Made
3. Could Have Made
4. Could Not be Determined
5. Indications Did Not Make
6. Elimination
7. Unsuitable

Closer examination, however, uncovers the implied probability.

Identification: The accompanying explanation states that "Identification" is one in which the examiner "would not expect to find [the combination of features] . . . in another source," but that "exclusion of all others can never be empirically proven." This would imply a probability in excess of 99% but less than 100%. (or some similar number, such as >99.5% or 99.9%).
Probably Made: The accompanying explanation states that "Probably Made" is one in which "it is unlikely that another shoe/tire is the source," but where an "identification" cannot be made. Theoretically, this would imply a


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probability in excess of 50% but less than 99%. Even assuming that the intent is to weight it higher, for example >60% but <99%, the problem remains the same: a de facto weight has been attached.
Could Have Made: The accompanying explanation states that "Could Have Made" is one in which there are similar class characteristics. This invites the inference of a probability somewhere in a grey zone between (for example) 45%-55%, or perhaps 40%-60%.
Could Not Be Determined: The statement that the examiner could not determine whether a match exists or not is functionally the same as the last category: Unsuitable.
Indications Did Not Make: The accompanying explanation states that "Indications Did Not Make" is the antimere of "Probably Made." Theoretically, this would imply a probability somewhere lower than 50%, or conservatively, <40% but >1%.
Elimination: The accompanying explanation states that "Elimination" is the antimere of "Identification." This would imply a probability less than 1% (or perhaps 0.5% or 0.9%).

Moving away from probability weighting is a positive development. The problem is that when too many categories of observations are developed, the implied probabilities begin to creep back into the process through the backdoor.

Perhaps it isn't surprising that Latent prints, which has taken its share of criticism on the issue, has adopted a simplified reporting nomenclature: Identification, Inconclusive, and Exclusion.

Clearly, any categorization involves implied weighting. The more categories that exist, the more the mind divides the percentage pie and assigns weight to those categories. As a result, the more slices to the pie, the more important the distinctions between the slices become, and to resolve those distinctions, the mind infers weight. By limiting the categories, such as to three (as proposed for Latent Prints) this problem is reduced.



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**Comment ID:** 0085
**Discipline:** Latent Prints
**Comment Category:** Language
**Name/Organization:** Simon Cole, National Commission on Forensic Science
**Summary:** Identification--The Statement Approved for Use consists of two sentences containing four separate assertions, some which appear to contradict one another, and whose relationship to one another is not clear. The Statement Approved for Use is not supported by scientific research. Numerous authorities agree that such statements are excessively strong, unnecessary, and unsupported. There is no scientific support for the claim that any method of latent print analysis, let alone the method practiced by DOJ agencies, enables complete separation of same-source and different-source pairings. The label "Identification" needs to be discarded. The term "Identification" has historically been used, both in forensic science and in common parlance, to connote non-probabilistic claims of absolute certainty.

**Comment ID:** 0085
**Discipline:** Latent Prints
**Comment Category:** Language
**Name/Organization:** Simon Cole, National Commission on Forensic Science
**Summary:** The general finding that arrangements of friction ridge features become rarer as the number of friction ridges increases does not tell us when the rarity of a particular arrangement of friction ridge features has reached the (mythical) point at which "the examiner would not expect to see that same arrangement of features repeated in another source." This assertion's implication that there is, in fact, some probability that the same arrangement of features may be found in more than one source contradicts assertion (a)'s claim that an examiner can make a "determination that two friction ridge prints originated from the same source."



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0085
Comment on FR Doc # N/A

## Submitter Information

**Name:** Simon Cole

## General Comment

See attached file(s)

## Attachments

PublicCommentCole4



Deliberative & Pre-Decisional

**Proposed Uniform Language Discipline Reviewed:** Forensic Latent Print
**Reviewer Name:** Simon A. Cole
**Reviewer Organization:** University of California, Irvine

The Reviewer is a Member, Human Factors Subcommittee, National Commission on Forensic Science. The comments are the reviewer's own and do not necessarily represent the views of the Human Factors Subcommittee.

**Statements Approved for Use in Laboratory Report and Expert Witness Testimony**

1. Identification

The Statement Approved for Use is not supported by scientific research and is not stated clearly.

The Statement Approved for Use is not stated clearly.

The Statement Approved for Use consists of two sentences containing four separate assertions, some which appear to contradict one another, and whose relationship to one another is not clear.

It is not clear whether the Statement Approved for Use is intended to be a non-probabilistic claim that the source of friction ridge print can be known with certainty, or some other type of statement. The very fact that ambiguity exists on this point means that the Statement Approved for Use is not stated clearly. If one considers the first half of the first sentence of the Statement Approved for Use in isolation—

> The examiner may state or imply that an *identification* is the determination that two friction ridge prints originated from the same source . . .

—then it certainly does appear to be a non-probabilistic claim that the source of friction ridge print can be known with certainty. However, while the purpose of the remainder of the text of the Statement Approved for Use is not obvious, it seems possible that it is intended to somehow weaken the strength of the claim made in the first half of first sentence. If so, it does not do so clearly.

The Statement Approved for Use is not supported by scientific research.

The Statement Approved for Use appears to be a non-probabilistic claim that the source of friction ridge print can be known with certainty. This is made clearest if one considers the first half of the first sentence of the Statement Approved for Use in isolation:



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a) The examiner may state or imply that an *identification* is the determination that two friction ridge prints originated from the same source . . .

If the Statement Approved for Use is indeed a non-probabilistic claim that the source of friction ridge print can be known with certainty, then it is not supported by scientific research. Numerous authorities agree that such statements are excessively strong, unnecessary, and unsupported (see, e.g., Kwan, 1977; Robertson, 1990; Stoney, 1991: 198; Risinger and Saks, 1996; Starrs, 1999; Champod and Evett, 2001: 113; Inman and Rudin, 2001; Thornton and Peterson, 2002; Cole, 2004; Broeders, 2006; Meuwly, 2006; Biedermann et al., 2008; Champod, 2008; Mnookin, 2008; Saks and Koehler, 2008; Cole, 2009; Koehler and Saks, 2010; Margot, 2011: 95; Page et al., 2011; Amorim, 2012; Biedermann et al., 2013; Houck, 2013; Kaye, 2013; Cole, 2014).

We are next faced with the question of whether the Statement Approved for Use is, in fact, intended to be something other than a non-probabilistic claim that the source of friction ridge print can be known with certainty. This is suggested by the fact that this non-probabilistic claim is then followed by three additional assertions:

b) . . . because there is sufficient quality and quantity of corresponding information such that the examiner would not expect to see that same arrangement of features repeated in another source.
c) While an *identification* to the absolute exclusion of all others is not supported by research, . . .
d) . . . studies have shown that as more reliable features are found in agreement, it becomes less likely to find that same arrangement of features in a print from another source.

Do any or all of these additional assertions somehow transform the non-probabilistic claim that the source of friction ridge print can be known with certainty into a different claim that is supported by scientific research? No. We can examine each of these additional assertions in turn.

b) . . . because there is sufficient quality and quantity of corresponding information such that the examiner would not expect to see that same arrangement of features repeated in another source.

If this statement is taken seriously, then it is claiming that an identification is made when a latent print examiner subjectively believes that they are in a position to ascertain that the amount of corresponding friction ridge features that they perceive always derive from same-source pairings and never derive from different-source pairings. In biometric terms, this is a claim that the receiver operating characteristic (ROC) of the system contains no overlap between same-source and different-source comparisons. In biometrics, such as system is considered unachievable. There is no scientific support for the claim that any method of latent print analysis, let alone the



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method practiced by DOJ agencies, enables complete separation of same-source and different-source pairings.

> c) While an *identification* to the absolute exclusion of all others is not supported by research, . . .

The inclusion of this assertion after assertion (a) implies that an "an *identification* to the absolute exclusion of all others," is somehow different from "the determination that two friction ridge prints originated from the same source." However, this is false and not supported by scientific research (Cole, 2014). There is no logical, scientific, or linguistic difference between the statements:

- Two friction ridge prints originated from the same source; and
- Two friction ridge prints originated from the same source to the absolute exclusion of all others.

If an expert is testifying that two friction ridge prints originated from the same source, then "all others" have necessarily been eliminated as sources of both friction ridge prints.

If the DOJ believes there is a logical difference between these statements, neither the Proposed Uniform Language nor the Supporting Documentation explains it.

It is also implausible to believe that a fact-finder or other consumer of the evidence will perceive a meaningful difference between the two statements. If the DOJ has a reason to believe that fact-finders will perceive these statements to be different, then that reason is not explained in either the Proposed Statement or the Supporting Documentation. Thus, the statement is at odds with NIST/NIJ Report Recommendation 3.7, which says "latent print examiners should not report or testify, directly or by implication, to a source attribution to the exclusion of all others in the world" (NIST, 2012: 72).

> d) . . . studies have shown that as more reliable features are found in agreement, it becomes less likely to find that same arrangement of features in a print from another source.

This is a reasonable assertion. It is unclear, however, what relevance it has to the first clause of the sentence in which it is contained, assertion (c), or in what way it qualifies that assertion. It is true that studies have supported the intuition that the greater the number of friction ridge features in a particular arrangements the rarer a similar arrangement of friction ridge feature in the population of friction ridges. But this finding does not support "a determination that two friction ridge impressions originated from the same source."

This general finding—that more features are more discriminating—tells us nothing about *how* discriminating friction ridge features are. The finding would be equally



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true of features that are not very discriminating and of features that are very discriminating.

The general finding that arrangements of friction ridge features become rarer as the number of friction ridges increases does not tell us when the rarity of a particular arrangement of friction ridge features has reached the (mythical) point at which "the examiner would not expect to see that same arrangement of features repeated in another source."

Finally, this assertion's implication that there is, in fact, some probability that the same arrangement of features may be found in more than one source contradicts assertion (a)'s claim that an examiner can make a "determination that two friction ridge prints originated from the same source."

The Supporting Documentation

The Supporting Documentation claims that the Statement Approved for Use is supported by:

- The persistence and uniqueness of friction ridge skin
- Population studies of the frequency of features
- The aforementioned finding about rarity increasing as the number of friction ridges increases

These studies cannot support "a determination that two friction ridge impressions originated from the same source" unless one actually used these studies to try to estimate the rarity of the arrangement of features. There is no discussion in the Supporting Documentation of these studies actually being used in this manner.

Conclusion

The statement should be revised so as not to be a claim of absolute certainty. The best way to achieve this would be make clear that there are two hypotheses—that two friction ridge prints originated from the same source and that two friction ridge prints originated from difference source—and both have a non-zero probability.

In addition, I would suggest that the label "Identification" needs to be discarded. The term "Identification" has historically been used, both in forensic science and in common parlance, to connote non-probabilistic claims of absolute certainty, as this proposed Statement Approved for Use itself demonstrates. The Proposed Uniform Language cannot plausibly change the meaning of this word for the public, or even the latent print discipline, by fiat.



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2. Inconclusive

The Statement Approved for Use is stated clearly and accurately reflects consensus language. It is not clear what it would mean for this statement to be supported by scientific research.

The DOJ should consider adding further specificity to Inconclusive statements, along the lines suggested by SWGFAST (2013). The differences between the three different types of Inconclusive statement discussed by SWGFAST—(1) Lack of Comparable Areas; (2) Lack of Sufficiency for Individualization; and (3) Lack of Sufficiency for Exclusion—may have consequences to litigants, and, therefore, the specific type of Inconclusive statement should be made clear in DOJ testimony and reports.

3. Exclusion

The Statement Approved for Use is supported by scientific research, accurately reflects consensus language, and is stated clearly.

**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony**

1. Exclusion of All Other Sources

The statement is correct that a testimonial claim "that two friction ridge prints originated from the same source to the exclusion of all other sources" is not supported by scientific research. However, given that the Proposed Uniform Language includes "the determination that two friction ridge prints originated from the same source" as a Statement Approved for Use, the net effect of the Proposed Uniform Language is to suggest that non-probabilistic claims that two friction ridge prints originate from the same source are supported by scientific research as long as the words "to the exclusion of all other sources" are not uttered. This is a false claim which is not supported by scientific research. There is no logical, scientific, or linguistic difference between the statements:

- Two friction ridge prints originated from the same source; and
- Two friction ridge prints originated from the same source to the absolute exclusion of all others

If an expert is testifying that two friction ridge prints originated from the same source, then "all others" have necessarily been eliminated as sources of both friction ridge prints.

If there is a logical difference between the two statements above, neither the Proposed Uniform Language nor the Supporting Documentation explains it. If the DOJ believes there is a logical difference between these two statements, it should clearly explain the difference and the basis for that difference.



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The Statement Not Approved for Use should be extended to include any non-probabilistic claim that the source of friction ridge print can be known with certainty.

The Supporting Documentation

The Supporting Documentation contains a misstatement that will not help clarify the Proposed Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline. Galton's statistical model and other early statistical models did not support testimony "that individuals can identify latent prints to the exclusion of all others." As the Supporting Documentation itself notes (fn. 42), Galton concluded that the probability of duplicate finger-size areas of friction ridge skin existing was around 1 in 4. More importantly, none of these statistical models told us anything about the ability of forensic latent print examiners to determine the source of friction ridge prints. This revisionist history does not help clarify the Proposed Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline.

2. Absolute or Numerical Certainty

The permanent non-approval of statements of absolute certainty is supported by scientific research.

The temporary non-approval of numerically calculated degrees of certainty (or, perhaps more precisely, degrees of uncertainty) is reasonable given the paucity of data, studies, and statistical models. However, it should be noted that a numerically calculated statement of certainty should be the goal toward which the forensic latent print discipline should be seeking to progress.

The Supporting Documentation

The Supporting Documentation contains a reference (fn. 47) to a document, the FBI Laboratory Latent Print Operations Manual Examining Friction Ridge Prints, that is not available to the public. If this document is to be relied upon as supporting documentation, it should be made available to the public.

The Supporting Documentation contains misstatements that will not help clarify the Proposed Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline. First, if it is true that examiners throughout the DOJ, not just at the FBI, "document the analysis of the latent impression before conducting an analysis of the known impression," this is an excellent practice. The practice of documentation does not, however, support any statement of certainty, and the Supporting Documentation seems to imply that it does.



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Second, the Supporting Documentation's statement that "conclusions . . . emanate from their [examiners'] skills, knowledge, experience, education, and training" may be read as a reversion to the now-discredited practice of claiming that forensic conclusions may be based on nothing more than the training and experience of the expert witness.

Third, the Supporting Documentation offers a misleading interpretation of the "published reliability studies" by stating that they "demonstrate that qualified examiners accurately assess the friction ridge detail to produce reliable conclusions." Qualified examiners reached both accurate and inaccurate conclusions in these studies. Therefore, the studies may as easily be interpreted as demonstrating that qualified examiners inaccurately assess friction ridge detail to produce inaccurate conclusions. A meaningful summary of the studies would not focus on the fact that some accurate (and inaccurate) results were reached, but rather on the relative frequency of both results.

3. Zero Error Rate

The Proposed Uniform Language correctly states that statements and implications of zero error rate and infallibility are not supported by scientific research.

The Supporting Documentation

The Supporting Documentation contains a minor contradiction that will not help clarify the Proposed Uniform Language for Testimony and Reports for the Forensic Latent Print Discipline. The Supporting Documentation correctly states that "the attempt . . . to separate the methodology error from practitioner error" is "now known to be inappropriate." However, three paragraphs later, the Supporting Documentation engages in precisely this inappropriate practice by stating "because of the possibility of practitioner error, it is no longer permissible to state that the comparison process has a zero error rate."

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Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11780

**Comment ID:** 0086
**Discipline:** Latent Prints
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** Identification section states "[t]he examiner may state or imply that an identification is the determination that two friction ridge impressions originated from the same source . . ."; however, under the section "Statements Not Approved" the Department states "[a]n examiner may not state or imply that two friction ridge prints originated from the same source . . ." This is contradictory.



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**Comment On:** DOJ-OLP-2016-0012-0010
LatentPrint_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0086
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

The Department of Justice should be commended for their efforts to offer uniform language for testimony and reports in an effort to standardize this across all Department laboratories and allow the opportunity to provide responses through public comment. I am very appreciative to have the opportunity to offer input. As a forensic practitioner, I have one major concern:

Under the proposed uniform language for "identification", the Department states "[t]he examiner may state or imply that an identification is the determination that two friction ridge impressions originated from the same source . . ."; however, under the section "Statements Not Approved" the Department states "[a]n examiner may not state or imply that two friction ridge prints originated from the same source . . .". Having the same language appear under both approved and not approved sections creates a conundrum for the examiner while further creating confusion to the fact-finder and reader of the reports. Consistent with several published criticisms, it is recommended that the DoJ consider alternative language to express the highest level of association between an unknown impression and a known source. Accordingly, perhaps an alternative suggestion may be to eliminate the statement ". . . two friction ridge impressions originated from the same source . . ." and instead simply state: "The examiner may state or imply that there is sufficient quality and quantity of corresponding information such that the examiner would not expect to see that same arrangement of features repeated in another source."



e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11782

**Comment ID:** 0087
**Discipline:** Footwear and Tire
**Comment Category:** Language, Underlying Science
**Name/Organization:** Ron Mueller, International Association for Identification, Footwear Subcommittee
**Summary:** Recommends that the conclusion scales (levels of association) be included in the document showing the level of association and then the accepted terminology to utilize in reports and court testimony.



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**Comment On:** DOJ-OLP-2016-0012-0004
Footwear Tiretread_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0087
Comment on FR Doc # N/A

## Submitter Information

**Name:** Ron Mueller

## General Comment

The International Association for Identification (IAI) Footwear Subcommittee has reviewed the Department of Justice (DOJ)
"PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE FORENSIC FOOTWEAR AND TIRE
IMPRESSION DISCIPLINE" and has concluded that the intent of the document is to give guidance on how DOJ personnel
are to write reports and testify in a court of law, not to abandon the established Scientific Working Group for Footwear and
Tire Track Evidence (SWGTREAD) standards of conclusions or even give guidance to other practitioners outside of DOJ.
While the document does not intend to change established conclusion scales previously published by SWGTREAD, it also
did not mention the conclusion scales. This subcommittee recommends that the conclusion scales (levels of association)
be included in the document showing the level of association and then the accepted terminology to utilize in reports and
court testimony.


Deliberative & Pre-Decisional

**Comment ID:** 0088
**Discipline:** Fiber
**Comment Category:** Language, Underlying Science
**Name/Organization:** Anonymous
**Summary:** Additional information should be included about the significance of the various types of fibers. Also, examiners can reach more definite conclusions than those supported in the document.



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**Comment On:** DOJ-OLP-2016-0012-0002
Fiber_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0088
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

The following comments are for the Proposed language for forensic textile fiber discipline:
- On page 1 under Manufactured Fibers, the following statement is weak: "The examiner may further state or imply that the manufactured fiber is consistent with a particular sub-group ..." Using appropriate techniques, the examiner should be able to state imply the particular sub-group.
- It is suggested if stating "optical properties" that additional explanatory information is provided.
- Additional information should be included about the significance of the various types of fibers. Again, red polyester fibers have more significance than blue cotton fibers.
- On page 2 under Exclusion, the following statement is weak : "...is not consistent with originating from the source of the known sample." A more definitive exclusion can be reached such as "The compared items exhibit differences in observed and/or measured properties that demonstrate they did not originate from the same source".

**Comment ID:** 0089
**Discipline:** SD Fiber
**Comment Category:** Language, Underlying Science
**Name/Organization:** Anonymous
**Summary:** Clarify significance of natural fibers versus synthetic fiber; some of the listed characteristics are not actually compared.



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20220314-11787

# Re: Contextual Bias in Forensic Science Workshop

**From:** "Laporte, Gerald (OJP)" <(b) (6)
**To:** "Antell, Kira M. (OLP)" <(b) (6)
**Cc:** "Hunt, Ted (ODAG)" <(b) (6)
**Date:** Tue, 06 Feb 2018 10:04:33 -0500

Checking on this a little more.

Gerry LaPorte
Director
Office of Investigative and Forensic Sciences
National Institute of Justice
Office: (b) (6)
Mobile: (b) (6)

On Feb 5, 2018, at 3:43 PM, Antell, Kira M. (OLP) <(b) (6) wrote:

Hi Gerry,

I there any chance NIJ can upport my attendance at the "Conte tual Bia in Foren ic Science" work hop March 13 15? I think it would be very helpful for me to attend it as we think about what we may start to develop as a Department. Is NIJ sending anyone else?

---

**From:** Laporte, Gerald (OJP)
**Sent:** Thursday, January 4, 2018 11:16 AM
**To** Antell, Kira M (OLP) (b) (6)
**Cc:** Hunt, Ted (ODAG) <(b) (6)
**Subject:** Fwd: Contextual Bias in Forensic Science Workshop

Duplicative Material

# PUBLIC SUBMISSION

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**Comment On:** DOJ-OLP-2016-0012-0003
Fiber_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0089
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

While most of the overall information in the supporting documentation for the language for the forensic textile fiber discipline is correct, there are some things that should either be clarified or corrected including:
- Clarification of the significance of natural fibers versus synthetic fibers. A red polyester fiber has a different significance than a blue cotton fiber.
- Some of the listed characteristics for natural fibers are typically not compared as there is such variation in natural fibers including shape and diameter.
- Typically a PLM is used prior to a comparison microscope as the fiber type is determined by PLM before comparing fibers.



Deliberative & Pre-Decisional

**Comment ID:** 0090
**Discipline:** Footwear and Tire
**Comment Category:** Language, Underlying Science
**Name/Organization:** Anonymous
**Summary:** Most of the language directly aligns with the current practices and report wording used in the MN BCA. The BCA Trace Evidence Section as well as the SWGTREAD standard for conclusions includes a 'limited association' or 'limited association of class characteristics' conclusion and this document does not. This conclusion allows for differentiation between an association of class characteristics without limitations and one that does have limitations. It is important to have this classification for instances where there are limitations to the examination such as lack of scale, lack of detail, the improper use of photographic techniques, etc.

**Comment ID:** 0090
**Discipline:** Footwear and Tire
**Comment Category:** Language, Underlying Science
**Name/Organization:** Anonymous
**Summary:** This document does not cover the entire breadth of forensic footwear and tire track impression examination since it does not include possible make and model determination for unknown impressions. Although implied, clarification should be added which clarifies that document is limited to comparative examinations.

**Comment ID:** 0090
**Discipline:** Footwear and Tire
**Comment Category:** Language, Underlying Science
**Name/Organization:** Anonymous
**Summary:** In the 'Probably Made' conclusion the following wording is not particularly clear: 'prevent effecting an identification'.

**Comment ID:** 0090
**Discipline:** Footwear and Tire
**Comment Category:** Language, Underlying Science
**Name/Organization:** Anonymous
**Summary:** The statistical weight section states: 'The examiner may not state a numerical value or probability associated with his/her opinion.' This could be misinterpreted to mean that reports may not contain any numbers (e.g. four of the five questioned impressions...).



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Footwear Tiretread_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0090
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

- Most of the language in this document directly aligns with the current practices and report wording used in the MN BCA Trace Evidence Section regarding the forensic examination of footwear and tire impression analysis with the following exception:
o The BCA Trace Evidence Section as well as the SWGTREAD standard for conclusions includes a 'limited association' or 'limited association of class characteristics' conclusion and this document does not. This conclusion allows for differentiation between an association of class characteristics without limitations and one that does have limitations. In my opinion, it is important to have this classification for instances where there are limitations to the examination such as lack of scale, lack of detail, the improper use of photographic techniques, etc.
- Additionally, there are some wording that is not necessarily that clear and could be misinterpreted.
o First, this document does not cover the entire breadth of forensic footwear and tire track impression examination since it does not include possible make and model determination for unknown impressions. Although implied, clarification should be added which clarifies that document is limited to comparative examinations.
o In the 'Probably Made' conclusion the following wording is not particularly clear: 'prevent effecting an identification'. Please consider revising this wording.
o The statistical weight section states: 'The examiner may not state a numerical value or probability associated with his/her opinion.' This could be misinterpreted to mean that reports may not contain any numbers e.g. Four of the five questioned impressions... Consider revising to 'statistical value' or like wording.



Deliberative & Pre-Decisional

**Comment ID:** 0091
**Discipline:** Glass
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** The questioned item exhibits some dissimilarity to the known item but lacks sufficient quality or detail for an absolute elimination to be made. This conclusion type may be appropriate where the refractive indexes differ but only very slightly and chemical analysis is not available. Additionally, this document allows, 'conclusions may include probabilities based on appropriate databases or documented frequencies', however, does not address particular requirements for these reported conclusions. Although this may be outside the scope of this document and addressed in particular agency SOPs, specific guidelines should be considered.



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20220314-11791

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**Comment On:** DOJ-OLP-2016-0012-0008
Glass_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0091
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

- Most of the language in this document directly aligns with the current practices and report wording used in the MN BCA Trace Evidence Section with the following exceptions:
o We have one additional association category that states it is highly likely the pieces came from a common source.
Trace Evidence: Type II Association: Association with distinct characteristics
An association in which items correspond in all measured physical, chemical properties, and/or microscopic characteristics, and share distinctive characteristic(s) that would not be expected to be found in the population of this evidence type. The distinctive characteristics were not sufficient for a Type I Association.
This conclusion would provide additional distinction when distinctive characteristics are observed in addition to correspondence of class characteristics.
o What have one additional non-associative category where a glass pieces exhibit differences but these differences may not be sufficient for a complete elimination.
Trace Evidence: Dissimilar:
The questioned item exhibits some dissimilarities to the known item but lacks sufficient quality or detail for an absolute elimination to be made.
This conclusion type may be appropriate where the refractive indexes differ but only very slightly and chemical analysis is not available.
o Additionally, this document allows, 'conclusions may include probabilities based on appropriate databases or documented frequencies', however, does not address particular requirements for these reported conclusions. Although this may be outside the scope of this document and addressed in particular agency SOPs, specific guidelines should be considered.


Deliberative & Pre-Decisional

**Comment ID:** 0092
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Anonymous, Westchester County
**Summary:** In statements not approved, discussion should be allowed that includes the range of possible drug amounts that could have been ingested.



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**Comment On:** DOJ-OLP-2016-0012-0015
Toxicology_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0092
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous
**Organization:** Westchester County, NY

## General Comment

Please separate urine and hair in the discussions.

Statements NOT Approved:
1 Post-mortem and dose: Many drugs exhibit postmortem redistribution. Using the appropriate formulas, knowing the circumstances of the case, analyzing both femoral blood, peripheral blood and in appropriate cases gastric contents, a discussion should be allowed that includes the range of possible drug amounts that could have been ingested.

4. When discussing a urine drug concentration, it is important to have all of the facts regarding an incident if possible. You should be able to comment if the level indicates older use, abuse or recent use. With high urine drug levels, (example high cocaine levels in the urine) and the fact that a person trying to say they used the drug weeks ago or days ago, along with observations or reports, you should be able to discuss the drug and the levels. The Workplace drug testing program has done extensive research to determine what levels are appropriate for the certified labs and drug testing. It is important to be able to discuss what those levels could indicate.


Deliberative & Pre-Decisional

**Comment ID:** 0093
**Discipline:** SD Serology
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** The process of coupling multiple screening tests is used in analytical forensic disciplines (e.g. Drug Chemistry). However, the scientific community disagrees.



e8c99271-a235-4c1b-b11f-92a714e0792a
20220314-11795

**Comment ID:** 0093
**Discipline:** SD Serology
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** The process of coupling multiple screening tests is used in analytical forensic disciplines (e.g. Drug Chemistry). However, the scientific community disagrees.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0013
Serology_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0093
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

This document states 'The process of confirming that a body fluid is present on evidence can either be done using a single identifying test or by coupling multiple screening tests. It is a scientifically acceptable practice to use two screening techniques that are based on different chemical principles to confirm the presence of a body fluid if the limitations of one test are not subject to the same limitations as the other.' This goes against the general practice of the forensic serology community. There is also no scientific literature that supports this claim in the serology discipline. Please note the references cited here are from SOFT/AAFS Forensic Toxicology Laboratory Guidelines. Coupling multiple screening tests may strongly indicate the presence of a body fluid but does not confirm its presence to the exclusion of all others.
The process of coupling multiple screening tests is used in analytical forensic disciplines (e.g. Drug Chemistry). However, the scientific community disagrees and I believe there some kind of discussion regarding this subject at the OSAC level.

**Comment ID:** 0094
**Discipline:** Overall
**Comment Category:** Underlying Science
**Name/Organization:** Luan Lunt, European Network of Forensic Science Institutes, M1 Monopoly Group
**Summary:** Forensic science is one science and therefore should report using the same principles and general language whatever the discipline. Having several different guidelines will bring confusion to the judiciary. We would welcome further attempts at bringing different disciplines together to agree on a common guideline, vocabulary and scales of support, which should enable clearer and more consistent understanding by the judiciary.

**Comment ID:** 0094
**Discipline:** Overall
**Comment Category:** Underlying Science
**Name/Organization:** Luan Lunt, European Network of Forensic Science Institutes, M1 Monopoly Group
**Summary:** The 'building blocks' for reporting results in forensic science, as described in the National Research Council report, are missing.

**Comment ID:** 0094
**Discipline:** Overall
**Comment Category:** Underlying Science
**Name/Organization:** Luan Lunt, European Network of Forensic Science Institutes, M1 Monopoly Group
**Summary:** The approach adopted regarding evaluation and reporting should follow the following principles: balance, logic, robustness and transparency. This is unfortunately not the case here, for example, the document appears to prohibit the use of any Bayesian approach in the interpretation of findings for some disciplines, but not others.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0094
Comment on FR Doc # N/A

## Submitter Information

**Name:** Luan Lunt
**Address:** United Kingdom,
**Email:** (b) (6)
**Phone:** (b) (6)
**Organization:** ENFSI M1 Monopoly Group

## General Comment

We are thankful for the opportunity to comment this text.

We have three main remarks that we would like to bring to the attention of the authors:

1. Having several disparate guidelines reinforces the problem that forensic science works in silos. Forensic science is one science and therefore should report using the same principles and general language whatever the discipline. Having several different guidelines will also bring confusion to the judiciary. We would welcome further attempts at bringing different disciplines together to agree on a common guideline, vocabulary and scales of support, which should enable clearer and more consistent understanding by the judiciary.
2. The 'building blocks' for reporting results in forensic science, as described in the NRC report, are missing (National Research Council Strengthening Forensic Science in the United States: A Path Forward, 2009. The National Academies Press, Washington D.C., 2009), as are references to the European literature.
3. The approach adopted regarding evaluation and reporting ought to follow the following principles: balance, logic, robustness and transparency (see http://www.enfsi.eu/news/enfsi-guideline-evaluative-reporting-forensic-science). This is unfortunately not the case here, as, for example, the document appears to prohibit the use of any Bayesian approach in the interpretation of findings for some disciplines, but not others.



e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11799

**Comment ID:** 0095
**Discipline:** SD Glass
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** It would be beneficial to reference that micro-XRF is an acceptable method for the evaluation of glass evidence in light of the fact that this is the instrumentation most readily available to and utilized by the majority of forensic labs performing glass analysis.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0009
Glass_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0095
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

There are policy recommendations discussing ICP and refractive index methods, but not a policy consideration that discusses
the use of micro-XRF. Although it is mentioned that "other methods" were evaluated using the research of Trejos et al. it would
be benefical to reference that micro-XRF is an acceptable method for the evaluation of glass evidence in light of the fact that
this is the instrumentation most readily available to and utilized by the majority of forensic labs performing glass analysis.
The ASTM ASTM: E2926-13 Standard Test Method for Forensic Comparison of Glass Using Micro X-ray Fluorescence
(-XRF) Spectrometry is current proposed for consideration as an OSAC standard. Analysis of glass by micro-XRF can
successfully provide scientific support to the proposed testimony and report language.


Deliberative & Pre-Decisional

**Comment ID:** 0096
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Sarah Olson, North Carolina Office of Indigent Defense Services
**Summary:** Re: provision # 3, 4, 6: Many examiners are technicians who are trained to perform forensic toxicology analysis using specific instruments in their labs may not be trained in the fields of pharmacology, physiology, pathology, or medicine and therefore are not qualified to opine on the impairing effects of the substances that they have identified in forensic samples. If the witness does not have training in pharmacology, physiology, pathology or medicine, they should not provide expert testimony in those fields, even if they have read articles in peer reviewed journals.

**Comment ID:** 0096
**Discipline:** Toxicology
**Comment Category:** Language
**Name/Organization:** Sarah Olson, North Carolina Office of Indigent Defense Services
**Summary:** Re: Re: provision #9: Testimony regarding retrograde extrapolation of ethanol concentration should not be approved wholesale. It simply is not applicable uniformly across all individuals and in all situations. Many applications of this practice have been questioned in peer reviewed journals. Examiners should be given additional guidance about under what conditions this type of calculation should be performed and appropriate limits to testimony regarding this evidence.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0014
Toxicology_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0096
Comment on FR Doc # N/A

## Submitter Information

**Name:** Sarah Olson
**Address:**
123 W. Main St. Ste 400
Durham, 27701
**Email:** (b) (6)
**Phone:** (b) (6)

## General Comment

I am an attorney with forensic science training who works as the Forensic Resource Counsel for the North Carolina Office of Indigent Defense Services. I have comments on the following provisions of this document:

3. The examiner may report and/or state the pharmacokinetic and pharmacodynamic effects of drugs and poisons based on data published in peer reviewed literature or other authoritative sources.

4. The examiner may report and/or state his/her opinion as to the effects of drugs or poisons on the average human. This opinion should be based on the facts of the case, medical information about the individual that the specimens were collected from (e.g., weight, height, disease state, age), current published studies, and/or the examiner's training in the fields of pharmacology, physiology, pathology, clinical chemistry, and/or toxicology.

6. The examiner may report and/or state that a reported blood concentration is within the therapeutic range, toxic range, or consistent with reported fatal concentrations, provided the statement is based on data published in peer reviewed literature or other authoritative sources.

9. The examiner may report and/or state an extrapolated ethanol concentration in a blood sample collected from a living person.

Re: # 3, 4, 6: Many examiners are technicians who are trained to perform forensic toxicology analysis using specific instruments in their labs and are qualified to use these instruments and report the results of those tests, but they may not be trained in the fields of pharmacology, physiology, pathology, or medicine and therefore are not qualified to opine on the impairing effects of the substances that they have identified in forensic samples. If


Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11803

the witness does not have training in pharmacology, physiology, pathology or medicine, they should not provide expert testimony in those fields, even if they have read articles in peer reviewed journals.

Re: #9: Testimony regarding retrograde extrapolation of ethanol concentration should not be approved wholesale. It simply is not applicable uniformly across all individuals and in all situations. Many applications of this practice have been questioned in peer reviewed journals. Examiners should be given additional guidance about under what conditions this type of calculation should be performed and appropriate limits to testimony regarding this evidence.

**Comment ID:** 0097
**Discipline:** Toxicology
**Comment Category:** Language, Underlying Science
**Name/Organization:** Anonymous
**Summary:** Disagree with the use of the word "Inconclusive." If a screening test must be reported, then it should say "Screening test positive for XXX by immunoassay (or whatever technique was used), unconfirmed."



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0015
Toxicology_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0097
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

Page 7 -Conclusions: I disagree with the use of the word "Inconclusive." If a screening test must be reported, then it should say "Screening test positive for XXX by immunoassay (or whatever technique was used), unconfirmed." Or a section of the report must indicate that it was unconfirmed. The lab can also indicate that the sample was IQS for confirmation.



Deliberative & Pre-Decisional

**Comment ID:** 0098
**Discipline:** SD Toxicology
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** In section C of the document (Conclusions within the Forensic Toxicology Discipline), the conclusion of inconclusive was listed as having a positive immunoassay screen with insufficient quantity of sample for a second confirmatory technique.
Inconclusive however implies that there is no value in the test result, whereas immunoassay screens do have value.



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**Comment On:** DOJ-OLP-2016-0012-0015
Toxicology_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0098
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

In section C of the document (Conclusions within the Forensic Toxicology Discipline), the conclusion of inconclusive was listed
as having a positive immunoassay screen with insufficient quantity of sample for a second confirmatory technique.
Inconclusive however implies that there is no value in the test result. There is no point in running an analysis if no report will
be issued. If the inconclusive designation is adopted then there is no point in running an immunoassay if there is an
insufficient amount of sample for a second confirmatory technique.
However an immunoassay screen does have value even without a confirmation. In a medical examiner case, if an immunoassay screen is positive for cocaine that would explain a sudden cardiac event. A result like this is better reported as
" screening test positive for cocaine. Insufficient quantity of sample for confirmation" as opposed to inconclusive which gives
no information whatsoever.

**Comment ID:** 0099
**Discipline:** Fiber
**Comment Category:** Nature of UTLRs, Underlying Science, Statistical Validity
**Name/Organization:** Lt. Jennifer Nates, South Carolina Law Enforcement Division
**Summary:** Inclusions can also be based on chemical properties of a fiber, not just the microscopic or optical as described in the document.

**Comment ID:** 0099
**Discipline:** Fiber
**Comment Category:** Nature of UTLRs, Underlying Science, Statistical Validity
**Name/Organization:** Lt. Jennifer Nates, South Carolina Law Enforcement Division
**Summary:** If an examiner cannot state that a fiber originated from a source during testimony when there is a cross-transfer of multiple items of evidence, then the examiner's opinion and interpretation of all of the evidence is not complete. The examiner's interpretation and opinion of all of the evidence that he or she analyzed must be provided to the court in order for the jury/judge to be able to consider all pertinent information. Additional work should be made to incorporate all of the Trace Evidence Categories of Testing into one document.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0099
Comment on FR Doc # N/A

## Submitter Information

**Name:** Lt. Jennifer Nates
**Address:**
4416 Broad River Road
Columbia, SC, 29210
**Email:** (b) (6)
**Phone:** (b) (6)
**Fax:** 803-896-7346

## General Comment

RE: DEPARTMENT OF JUSTICE PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE FORENSIC TEXTILE FIBER DISCIPLINE

1. Inclusions can also be based on chemical properties of a fiber, not just the microscopic or optical as described in the document.

2. It is important to note that, when considering trace evidence, a single examiner has the potential to analyze several different types of trace evidence items (glass, fibers, paint, etc.). Given this possibility, the potential for cross-transfer between questioned and known samples, as well as the transfer of different types of evidence is not discussed. If an examiner cannot state that a fiber originated from a source during testimony when there is a cross-transfer of multiple items of evidence, then the examiner's opinion and interpretation of all of the evidence is not complete. The examiner's interpretation and opinion of all of the evidence that he or she analyzed must be provided to the court in order for the jury/judge to be able to consider all pertinent information.

For example: A victim is struck by an unknown vehicle and that vehicle leaves the scene. The victim's clothing is analyzed and found to have a white paint smear on the back of the sweatshirt. This paint is composed of two different white paints, one more consistent with automotive and one more consistent with a spray paint. Once the vehicle has been found, a paint sample is submitted to the laboratory and found to be composed of a traditional automotive white paint, as well as white spray paint which are physically and chemically the same as the paint found on the victim's sweatshirt. Additionally, there are black fibers found embedded in this paint which are physically, chemically, and optically the same as the fibers from the victim's sweatshirt.


Deliberative & Pre-Decisional

Additional work should be made to incorporate all of the Trace Evidence Categories of Testing into one document so that these situations are not ignored or forgotten. An examiner should be able to testify, completely, to all the evidence he or she examined.



Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11811

**Comment ID:** 0100
**Discipline:** Overall
**Comment Category:** Language
**Name/Organization:** Committee for Public Counsel Services (CPCS) and Massachusetts Association of Criminal Defense Lawyers (MACDL)
**Summary:** The ULTRs and Supporting Documentation should be more explicit with respect to range of language that is considered to exceed the limits of science, and should track the three Error Types identified by the FBI in its review of laboratory reports and testimony related to microscopic hair examinations.

**Comment ID:** 0100
**Discipline:** Overall
**Comment Category:** Language
**Name/Organization:** Committee for Public Counsel Services (CPCS) and Massachusetts Association of Criminal Defense Lawyers (MACDL)
**Summary:** Testimony and reports must explicitly acknowledge that cognitive bias is a potential source of error in all forensic disciplines, not just latent print analysis.

**Comment ID:** 0100
**Discipline:** Overall
**Comment Category:** Language
**Name/Organization:** Committee for Public Counsel Services (CPCS) and Massachusetts Association of Criminal Defense Lawyers (MACDL)
**Summary:** To the extent that forensic examiners in the disciplines covered by the proposed ULTRs rely on the ACE-V process in reaching a conclusion, the ULTRs should require examiners to acknowledge and state in their reports and testimony that this process involves a subjective judgment by the individual examiner, and the corresponding Supporting Documentation should address the following concerns and limitations with this process.

**Comment ID:** 0100
**Discipline:** Overall
**Comment Category:** Language
**Name/Organization:** Committee for Public Counsel Services (CPCS) and Massachusetts Association of Criminal Defense Lawyers (MACDL)
**Summary:** The current proposal‘s permissive, somewhat passive language (e.g. “may state or imply” and “may not state or imply”) does not provide clear guidance on the use of uniform language in testimony and reports. This creates disparate opinions and language from case to case and analyst to analyst, and leaves room for misunderstanding and error.



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**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0100
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous
**Organization:** Committee for Public Counsel Services (CPCS) and Massachusetts Association of Criminal Defense Lawyers (MACDL)

## General Comment

PUBLIC COMMENT ON PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS
Docket No. OLP 157

The Staff of the Committee for Public Counsel Services (CPCS), Boston, Massachusetts
Massachusetts Association of Criminal Defense Lawyers (MACDL), Boston, Massachusetts

July 8, 2016

See attached file(s)

## Attachments

CPCS MACDL-Submission of Comments for Docket No. OLP 157



Deliberative & Pre-Decisional

**PUBLIC COMMENT ON PROPOSED**

**UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**

**Docket No. OLP 157**

**The Staff of the Committee for Public Counsel Services (CPCS), Boston, Massachusetts**

**Massachusetts Association of Criminal Defense Lawyers (MACDL), Boston, Massachusetts**

**July 8, 2016**

43 pages

**PUBLIC COMMENT ON PROPOSED**
**UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**

**The Staff of the Committee for Public Counsel Services (CPCS), Boston, Massachusetts**
**Massachusetts Association of Criminal Defense Lawyers (MACDL), Boston, Massachusetts**

**July 8, 2016**

## General Comments

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The Staff of the Committee for Public Counsel Services (CPCS) and the Massachusetts Association of Criminal Defense Lawyers (MACDL) are grateful to the Department of Justice (DOJ) for this opportunity to provide feedback on the proposed Uniform Language for Testimony and Reports (ULTR) and accompanying Supporting Documentation for the first set of seven forensic disciplines released on June 3, 2016. CPCS is the statewide public defender agency in Massachusetts, and one of only a few public defender agencies nationally with an in-house Forensic Services Unit and an in-house Innocence Program. MACDL is the state-wide professional organization for criminal defense lawyers.

The Commonwealth of Massachusetts has been deeply affected by serious flaws in the field of forensic science in recent history. As the agencies that are tasked with defending the rights of persons accused of crime in Massachusetts against the backdrop of fraud, malfeasance and misunderstandings about what any particular forensic discipline can be trusted to demonstrate, we are keenly aware of the need for clear, reliable and scientifically supportable language in the forensic science disciplines.

While we acknowledge the Department of Justice's (DOJ) stated commitment to ensuring the accuracy of the testimony and laboratory reports of forensic experts and to strengthening the practice of forensic science through the application of sound scientific principles and procedures, we share the concerns raised by the Public Defender Service and Los Angeles Public Defender Office about the process and timing of the DOJ's promulgation of the proposed uniform language. In particular, we are concerned by the failure of the DOJ to convene a panel of independent experts to offer meaningful scientific peer review of the proposed standards.

We wish to offer several general comments that apply across the seven sets of proposed uniform language, as well as more detailed comments (in separate submissions) pertaining to several of the individual forensic disciplines. In doing so, we also wish to express our institutional support for the general and specific comments provided by the Innocence Project/Innocence Network, Public Defender Service and Los Angeles Public Defender Office.



Deliberative & Pre-Decisional

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**Range of error types**

**The proposed ULTRs and Supporting Documentation should be more explicit with respect to range of language that is considered to exceed the limits of science, and should track the three Error Types identified by the FBI in its review of laboratory reports and testimony related to microscopic hair examinations.**

- We agree with the Innocence Project/Innocence Network's Public Comment that the proposed uniform language and supporting documentation should be more explicit with respect to the range of language considered to exceed the limits of science.

- The ULTRs and Supporting Documentation should explicitly recognize *all three* of the error types identified by the FBI in conjunction with its hair examination review. At present, these documents generally recognize and address the first two error types identified by the FBI in conjunction with its hair examination review: (1) stating or implying an association with a specific individual to the exclusion of all others, and (2) assigning a weight or probability regarding the likelihood or rareness of a sample coming from a particular source. However, none of the ULTRs acknowledge or prohibit the third error type identified by the FBI in its hair review, which occurs when an examiner cites the number of cases "worked in the lab and the number of samples from different individuals that could not be distinguished from one another as a predictive value to bolster the conclusion that a hair belongs to a specific individual." The DOJ has already recognized in the hair examination context that language in the third error type invites the same scientifically unsupported probabilistic conclusions and is therefore highly problematic and impermissible. These statements clearly imply that the examiner's opinion of inclusion is highly probable, a claim that lacks any scientific basis.

**Cognitive Bias**

**Testimony and reports must explicitly acknowledge that cognitive bias is a potential source of error in *all* forensic disciplines, not just latent print analysis.**

- We agree with the Innocence Project/Innocence Network's Public Comment that testimony and reports must include discussion of uncertainty, sources of error, and sources of subjectivity.

- Testimony and reports should explicitly acknowledge that cognitive bias is a potential source of error in all human decision-making and therefore plays a role in every area of forensic analysis. See Kassin et al., "The Forensic Confirmation Bias: Problems, Perspectives, and Proposed Solutions," J. of Applied Research in Memory & Cognition 2, 42-52 at 44 (2013).



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- Among the Proposed ULTRs and Supporting Documentation that the DOJ has thus far released, the only document that even *mentions* cognitive bias as a potential source of error is the Supporting Documentation for the Latent Print Discipline. Even that document references only two sources of cognitive bias – circular reasoning and non-blind verification. However, there are many other ways in which forensic analysts are exposed to task-irrelevant information that creates unintentional contextual bias that can lead to erroneous conclusions. See, e.g., Dror, I., "Cognitive Neuroscience in Forensic Science: Understanding and Utilizing the Human Element," Phil. Trans. R. Soc. B 370 (2015).

- Moreover, contextual bias can impact an examiner's conclusions in many, if not all, areas of forensic analysis. See, e.g., Nakhaeizadeh, S., et al., "Cognitive Bias in Forensic Anthropology: Visual Assessments of Skeletal Remains is Susceptible to Confirmation Bias," Science & Justice 54, 208–214 (2014); Dror & Hampikian, "Subjectivity and Bias in Forensic DNA Mixture Interpretation," Science & Justice 51, 204-208 (2011).

- It is particularly important that forensic analysts acknowledge and mitigate the risk of cognitive bias, because, as the 2009 NAS Report noted, "the traps that can be created by such biases can be very subtle, and typically one is not aware that his or her judgment is being affected." National Research Council, Committee on Identifying the Needs of the Forensic Sciences Community, *Strengthening Forensic Science in the United States: A Path Forward*, National Academy of Sciences Press, 185 (2009).

- Consistent with the National Commission on Forensic Science document, "Ensuring that Forensic Analysis is Based upon Task-Relevant information," which was adopted on December 8, 2015, *all* DOJ Uniform Language for Testimony and Reports and *all* Supporting Documentation should require analysts to explicitly: (a) acknowledge cognitive bias as a potential source of error, (b) avoid exposure to all task-irrelevant information, and (c) document all information that was transmitted both in writing and orally to the forensic analysts. See https://www.justice.gov/ncfs/file/641676/download (last visited, July 5, 2016).

**ACE-V process**

**To the extent that forensic examiners in the disciplines covered by the proposed ULTRs rely on the ACE-V process in reaching a conclusion, the ULTRs should require examiners to acknowledge and state in their reports and testimony that this process involves a subjective judgment by the individual examiner, and the corresponding Supporting Documentation should address the following concerns and limitations with this process.**

- The ULTRs do not require examiners to utilize a particular methodology or process in analyzing questioned samples and comparing to known samples in the forensic disciplines included in the current Public Comment period. However, it is widely recognized that the ACE-V process is commonly utilized by forensic examiners to

conduct such comparisons, not only in the field of latent print examination, but also in the field of footwear and tire treat impression examinations.

- The Supporting Documentation and ULTRs for every forensic discipline that relies on or may rely on the process of ACE-V should include a discussion of ACE-V. The Supporting Documentation and ULTRs should make clear the following issues with respect to permissible testimony by examiners regarding their reliance on this process in *all* applicable forensic disciplines, not just latent fingerprint analysis.

- Subjectivity of ACE-V. The Supporting Documentation for every forensic discipline that utilizes or may utilize the ACE-V process should include an explicit acknowledgment that the ACE-V process involves a subjective judgment by the individual examiner that is based on a visual examination of questioned and known samples. The ULTRs for each forensic discipline should likewise require an explicit recognition of subjectivity.

- Cognitive bias. The Supporting Documentation for every forensic discipline that utilizes or may utilize the ACE-V process should include an explicit recognition that because the process requires subjective judgment on the part of the examiner, all available steps should be taken to minimize the potential sources of cognitive bias. *See* above discussion of cognitive bias.

- Probabilistic statements. The Supporting Documentation and ULTRs for every forensic discipline that utilizes or may utilize the ACE-V process should prohibit examiners from making statements in any of the three error types recognized by the FBI in the context of the hair examination review. The Supporting Documentation and ULTRs should specify that the examiner shall not state that "the quality and quantity of corresponding information [is] such that the examiner would not to expect to see that same arrangement in another source" or that "studies have shown that as more reliable features are found in agreement, it becomes less likely to find the same arrangement in a print from another source." These statements clearly imply that the examiner's opinion of inclusion is highly probable, a claim that lacks any scientific basis.

- Lack of empirically-derived evidence of significance of features. The lack of empirically-derived evidence or standards based upon evidence for determining what "more reliable features" means, or for determining the significance of any given X number of features, renders this proposed language meaningless.

- Verification. The examiner should not be allowed to state that his/her analysis has been verified by another examiner, or even mention the "verification" stage of the ACE-V process. In addition to the inherent hearsay and confrontation problems, such an assertion introduces elements of confirmation and contextual bias that cannot be adequately countered by cross-examination.

- NAS-Report critiques. The current discussion of the ACE-V process, which appears only in the Supporting Documentation to Latent Print Examinations, fails to address the finding by the 2009 NAS report that ACE-V "is not specific enough to qualify as



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a validated method for this type of analysis" because "merely following the steps of ACE-V does not imply that one is proceeding in a scientific manner or producing reliable results." The discussion of ACE-V also fails to recognize the challenges presented by the quality of latent prints (or footwear/tire tread impressions in that field), despite the fact that quality issues are routinely encountered in real life applications.

- Required safeguards. The changes and safeguards implemented by the FBI in light of the Brandon Mayfield case should not just be described in the Supporting Documentation. Rather, the Supporting Documentation should explicitly require examiners to implement the revised procedures as necessary precautions in the wake of that case.

**PUBLIC COMMENT ON PROPOSED**
**UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**

**Committee for Public Counsel Services (CPCS), Boston, Massachusetts**
**Massachusetts Association of Criminal Defense Lawyers (MACDL), Boston, Massachusetts**

**July 8, 2016**

Comments on Proposed Uniform Language for Testimony and Reports for the Forensic Textile Fiber Discipline

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## I. Uniform Language

The uniform language does not provide clear guidance on the use of uniform language in testimony and reports. The current proposal's permissive, somewhat passive language (e.g., "may state or imply" and "may not state or imply") reproduces the historical problems of providing forensic analysts far too little guidance about how to express their opinions to judges and juries. This creates disparate opinions and language from case to case and analyst to analyst, and leaves room for misunderstanding and error. For ***approved statements***, we recommend changing "may state or imply" to "shall state or imply," and for ***statements not approved***, changing "may not state or imply" to "shall not state or imply."

The comparison opinions by fiber and textile examiners should identify the types of examinations that were conducted and the order in which they were conducted.

Due to the lack of fiber statistics and fiber databases, it is not scientifically sound to infer or imply in a comparison opinion that a fiber came from a single source. Therefore, an examiner should make clear that a fiber examination can only provide an association at the class level and is not a positive identification. Similarly, examiners should be prohibited from state that a questioned fiber is consistent with *originating from* fibers in a known source or item. Comparison opinions should also make clear that no statistical value can be assigned to fiber comparisons, and should provide information on error rates or the lack thereof. Examiners should not cite the number of cases or fibers comparisons on which they have worked as a predictive value to their conclusions because there are no statistics or error rates to support such a value. As noted in the NAS report's discussion on fiber analysis (pages 162-163), there "have been no studies that characterize either reliability or error rates in the procedures."

## II. Supporting Documentation

There are statements within the Supporting Documentation that overstate the significance of an association between two fibers in the section on "Background" and "Theory of Textile Fiber Examination." The NAS report's discussion of the analysis of fiber evidence notes that there have been no studies to support the proposition in the Background section that "one


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would not expect to encounter two fibers selected at random to exhibit the same microscopic characteristics and optical properties."

Similarly, in the section on "Theory of Textile Fiber Examination, it is an overstatement to assert that "it would be unusual to encounter a fiber selected at random to be consistent with a particular source." More recently, in 2015 in the United Kingdom, the Forensic Science Regulator was created "to ensure that the forensic science services across the criminal justice system is subject to an appropriate regime of scientific quality standards." https://www.gov.uk/government/organisations/forensic-science-regulator. The Forensic Science Regulator published a guidance entitled "Cognitive Bias Effects Relevant to Forensic Science Examinations" which notes that "(f)or fibres, there is considerable empirical data to support interpretations, such as population studies, transfer and persistence studies, colour block studies and target fibre studies. There is currently no database that provides any guidance with respect to how common a particular fibre might be in the general population." The Supporting Documentation should explicitly state that fiber examination can only result in a class-level association.

The Supporting Documentation section should include information on the effect of cognitive bias and biasing information on an examiner's analysis. The supporting documentation should include a discussion of sources of uncertainty and error, including cognitive biases and the role that they can potentially play in a subjective interpretation. An understanding of cognitive biases would presumably inform the comparison process and establish a testing process that provides protections from cognitive biases.

As noted in "Cognitive Bias Effects Relevant to Forensic Science Examinations," the analysis of fibers can be subject to "… some form of subconscious and unintended bias and will be a particular risk where interpretation and opinions are required." Because the nature of fiber analysis requires that the examiner be informed of relevant case information, there is a risk of contextual bias. "Risks are low when empirical analysis forms part of the examination processes, and greater where there is an increased reliance on subjective observational analysis."

The "Policy Considerations" section should be more appropriately labeled "Considerations for Analysis and Interpretation." This section should include language in the NAS report which states that fiber analysis is used for the comparison of samples to a class of fibers and not for individualization, and on the lack of studies on reliability, error rates and measurements of uncertainty. The discussion of the information from the NAS report is difficult to follow. It should be simplified and clarified by presenting the main points, as they were discussed in the report.


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**This document provides examples of the scientifically-supported conclusions and opinions that may be contained in Department of Justice reports and testimony. These examples are not intended to be all inclusive and may be dependent upon the precedent set by the judge or locality in which a testimony is provided. Further, these examples are not intended to serve as precedent for other forensic laboratories and do not imply that statements by other forensic laboratories are incorrect, indefensible, or erroneous. 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 and litigative prerogatives of the Department.**

## Purpose and Scope

If adopted, this document will apply to Department of Justice personnel who perform forensic examinations and/or provide expert witness testimony regarding the forensic examination of fiber evidence. This document does not imply that statements made or language used by Department personnel that differed from these proposed statements were incorrect, indefensible, or erroneous.

This document provides the acceptable range of opinions expressed in both laboratory reports and during expert witness testimony while acknowledging that this document cannot address every variable in every examination.

## Statements Approved for Use in Fiber Examination Testimony and/or Laboratory Reports

### Fiber Classification

The examiner ~~may state or imply~~ shall state that a textile fiber is natural or manufactured (man-made).

### Natural Fibers

1. The examiner ~~may state or imply~~ shall state the type of natural fiber (e.g., cotton, wool, silk).

### Manufactured Fibers

2. The examiner ~~may state or imply~~ shall state the type of manufactured fiber (e.g., polyester, nylon). Where applicable, the examiner ~~may~~ shall further state ~~or imply~~ that the manufactured fiber is consistent with a particular sub-group (e.g., polyethylene terephthalate, nylon 6).

## Comparisons

### Inclusion

3. The examiner ~~may state or imply~~ should state:


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- the type of examinations that were conducted, and the order in which they were conducted;
- that ~~the~~ the questioned fiber exhibits the same microscopic characteristics and optical properties as the known sample; ~~.~~ that the questioned fiber is consistent with originating from ~~the source of the known sample or from another~~ an item comprised of fibers that exhibit the same microscopic characteristics and optical properties~~.~~; that this ~~a~~A fiber association is not a means of positive identification; that this comparison ~~;~~ can only produce an association at a class level (that is, to the same type of fiber, rather than to an individual source of the fiber), and that the number of possible sources for a specific fiber is unknown. ~~However, due to the variability in manufacturing, dyeing, and consumer use, one would not expect to encounter a fiber selected at random to be consistent with a particular source~~.
- ~~–~~that there is no empirical basis to opine on the statistical strength of these conclusions and they are based on training and experience alone. If there is evidence that training and experience does improve accuracy, the examiner may state that as well.
- the sources of error or uncertainty; available information on error rates and if error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.

**Exclusion**

4. The examiner ~~may state or imply~~ shall state that the questioned fiber is dissimilar to the known fiber sample and accordingly, is not consistent with originating from the source of the known sample.

**Statements Not Approved For Use in Fiber Examination Testimony and/or Laboratory Reports**

**Individualization**

1. The examiner ~~may not state or imply~~ shall not state or imply that a fiber came from a particular source to the exclusion of all other sources.
2. The examiner ~~may not state or imply~~shall not state or imply that a fiber came from a similar source unless the examiner also states that the number of possible sources for possible sources for a specific fiber is unknown..

**Statistical Weight**

3. The examiner ~~may not state or imply a~~shall not state or imply a statistical weight or probability to a conclusion or provide a likelihood or rareness that the questioned fiber originated from a particular source.
4. The examiner shall not cite the number of cases or fiber analyses worked in the lab and the number of samples from different materials that could not be distinguished from one another as a predictive value to bolster the conclusion that a fiber can be associated with a particular source.

**Zero Error Rate**



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5. The examiner ~~may not state or imply~~ shall not state or imply that the method used in performing fiber examinations has a zero error rate or is infallible.



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**DEPARTMENT OF JUSTICE PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS REVIEW SHEET**

**Directions:** This review sheet is designed to assist you in evaluating the attached Proposed Uniform Language for Testimony and Reports document against certain criteria while maintaining internal consistency in review and assessing comments.

Your use of this rating sheet is completely **optional**. While it is anticipated this review sheet will encourage comments on issues of particular importance, you are welcome to submit comments in any format that you believe appropriate. This review sheet is not intended to limit comments in any way.

If you elect to use the review sheet, you may find it helpful to frame your comments as suggested below.

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**Proposed Uniform Language Discipline Reviewed:**
**Reviewer Name:**
**Reviewer Organization:**

**Statements Approved for Use in Laboratory Reports and Expert Witness Testimony**
Provide a summary of your assessment of the statements approved for use, including the most important highlights from the individual criteria comments.

- The statements approved for use are supported by scientific research.
- The statements approved for use accurately reflect consensus language.
- The statements approved for use are stated clearly.

**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony**
Provide a summary of your assessment of the statements not approved for use, including the most important highlights from the individual criteria comments.

- The statements not approved for use are supported by scientific research.
- The statements not approved for use accurately reflect consensus language.
- The statements not approved for use are stated clearly.



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**This document sets forth background materials on the scientific research supporting examinations as conducted by the forensic laboratories at the Department of Justice. It also includes a discussion of significant policy matters. This document is provided to assist a public review and comment process of the related Proposed Uniform Language for Testimony and Reports (posted separately). It 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 and litigative prerogatives of the Department of Justice.**

# SUPPORTING DOCUMENTATION FOR DEPARTMENT OF JUSTICE PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE FORENSIC TEXTILE FIBER DISCIPLINE

## Background

The examination and comparison of textile fibers has been conducted for over a century. Early practices for textile identifications utilized compound light microscopy and chemical tests as the preferred methods.[1] Since that time, there have been numerous publications describing the examination, identification, and comparison of fibers utilizing various techniques.[2] Many of these techniques were developed and utilized by the textile industry[3] and adopted by the forensic science community. To date, the most common comparative methods employed for forensic purposes are comparison microscopy, polarized light microscopy, fluorescence microscopy, microspectrophotometry, and infrared spectroscopy.

A textile fiber is the basic element of textile materials such as apparel, carpeting, furniture, and cordage. A fiber can be natural (*e.g.*, cotton, wool, flax) or manufactured (*e.g.*, polyester, nylon, acrylic) and can be combined with other fibers in various ways to produce fabrics (*e.g.*,

[1] Matos, Louis J. (1915). The Identification of Textile Fibers. *Textiles*, pg. 16; Matos, Louis J. (1919). The Identification of Textile Fibers, Part 1. *Textiles*, 13-14; Matos, Louis J. (1919). The Identification of Textile Fibers, Part 2. *Textiles*, 16.

[2] American Society for Testing and Materials (1987): Standard Test Methods for Identification of Fibers in Textiles. ASTM D 276-87.; Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 13; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.; American Society for Testing and Materials (2008): Standard Guide for Forensic Analysis of Fibers by Infrared Spectroscopy. ASTM E 2224-02.

[3] Heyn, A.N.J. (1953). The Identification of Synthetic Fibers by Their Refractive Indices and Birefringence, *Textile Research Journal*, 23:246-251.; E.I. Du Pont de Nemours & Company. (1961): Identification of Fibers in Textile Materials. Technical Information Bulletin X-156.; The Textile Institute, Manchester (1985). Identification of Textile Materials, Manara Printing Services, London.; American Association of Textile Chemist and Colorists, AATCC Technical Manual, Research Triangle Park, NC; Mukhopadhyay, S. (2003). FTIR Spectroscopy – Principles and Applications. *Journal of the Textile Association*, 64 (4), 187-191.; Brady, Jr., R.F. (2003). Comprehensive Desk Reference of Polymer Characterization and Analysis: Polymer Characterization and Analysis, American Chemical Society and Oxford Universiisty Press, New York, NY.



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knit, woven, non-woven).[4] These fabrics may lose fibers from their structure that can be transferred directly or indirectly from one location to another. The transfer and detection of fibers depends on the nature of the contact, the type of donor and recipient material, and the movement of the recipient following a transfer.[5]

Textile fibers recovered from an item can be analyzed to identify whether it is natural or manufactured. Natural fibers may be further examined to determine the type of fiber (*e.g.*, cotton, wool, or flax). Manufactured fibers may be further examined to identify the type of manufactured fiber (*e.g.*, polyester, olefin, or acrylic) as well as the sub-group (*e.g.*, polyacrylonitrile methylacrylate or polypropylene). Furthermore, textile fibers may be examined to determine whether or not the questioned fiber is consistent with originating from a known source. Because textiles are mass produced, it cannot be concluded that a fiber originated from a particular source to the exclusion of all others~~. However, due to variations in the textile fiber population and the combination of techniques utilized for comparisons, one would not expect to encounter two fibers selected at random to exhibit the same microscopic characteristics and optical properties.~~[6]

**Theory of Textile Fiber Examination**

The examination of fibers relies on differences in microscopic characteristics and optical properties to classify and distinguish fibers. Studies have demonstrated that there is considerable variance in the fiber population~~., and that it would be unusual to encounter a fiber selected at random to be consistent with a particular source.~~[7] In a 2005 publication by Grieve et al., the authors stated the following:

[4] Hatch, K.L. (1993). Textile Science. West Publishing Company, St. Paul, MN. Chapter 1.; Robertson, J. and Grieve, M. (1999); Forensic Examination of Fibres, London: Taylor and Francis, Chapters 1 and 2.

[5] Pounds,C.A.; Smalldon, K.W. (1975): The transfer of fibres between clothing materials during simulated contacts and their persistence during wear. Part I--fibre transference. *Journal of Forensic Science*, 15, 17-27; Pounds,C.A.; Smalldon, K.W. (1975): The transfer of fibres between clothing materials during simulated contacts and their persistence during wear. Part II--fibre persistence. *Journal of Forensic Science*, 15, 29-37; Pounds,.C.A.; Smalldon, K.W. (1975): The transfer of fibres between clothing materials during simulated contacts and their persistence during wear. Part III--a preliminary investigation of the mechanisms involved. *Journal of Forensic Science*, 15, 197-207; Robertson, J. and Grieve, M. (1999); Forensic Examination of Fibres, London: Taylor and Francis, Chapter 5.

[6] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 1, Section 5.; Grieve, M.C., Biermann, T.W., and Schaub, K. (2005). The individuality of fibers used to provide forensic evidence – not all blue polyesters are the same, *Science and Justice*, 45: pp 13-28.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 13; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.

[7] Palmer, R., Hutchinson, W., Fryer, V. (2009). The discrimination of (non-denim) blue cotton. *Science & Justice*, 49, 12-18.; Palmer, Ray; Chinherende, Vongai (1996). A Targer Fiber Study Using Cinema and Car Seats as Recipient Items. *Journal of Forensic Sciences*, 41: 802-803. Grieve, M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.; Houck, Max (2003) Inter-comparison of unrelated fiber evidence, *Forensic Science International*, 135: 146-149. Jones, T. and Coyle, T. Synthetic flock fibres: a population and target fibre study. *Sci. Justice* 51(2), 68-71 (2010); Cook, R., and Wilson, C. The significance of finding extraneous fibers in contact cases. *Forensic Sci. Int.* 32 (4), 267-273 (1986); Jackson, G. and Cook, R. The significance of fibers found on car seats.



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> Fibres used in forensic casework suffer from a disadvantage common to other forms of trace evidence – it is not possible to state with absolute certainty that they originate from a specific source. Target fibre studies, population studies and research on 'blocks of colour' have effectively demonstrated the polymorphism of textile fibres (particularly man-made ones) and have shown that when a fibre is believed to have a specific putative source, the chance that it was from a different source purely by coincidence is extremely remote.[8]

Similar statements have been made by other authors due to studies that demonstrated variance in the fiber population.[9] In a study by Houck, [10] colored fibers from twenty unrelated cases were compared using FBI Laboratory procedures. Of the 2083 compared fibers, 1979 (95%) were distinguished utilizing comparison microscopy and polarized light microscopy, while the remaining 5% were distinguished with fluorescence microscopy and microscopectrophotometry. According to Houck, none of the 2083 fibers "…selected at random exhibited the same microscopic characteristics and optical properties; phrased another way, no incidental positive associations were found."[11] In another study, Grieve *et al*.[12] compared 255 garments of the same fiber type and color (blue polyester) using comparison microscopy, polarized light microscopy, fluorescence microscopy, and microspectrophotometry. Blue polyester was chosen since it is one of the most common fiber types and colors in the fiber population. Of the 255 blue polyester samples, 9 pairs could not be distinguished, six of which were determined to be from the same brand name. Brand names from the remaining three pairs could not be determined.

*Forensic Sci. Int.* 32 (4), 275-281 (1986); Cook, R. and Salter A.-M. The significance of finding extraneous fibres on clothing. IAFS, Dusseldorf, 1993; Bruschweiler,W. and Grieve, M.C. A study on the random distribution of a red acrylic target fibre. *Sci Justice* 37 (2) 85-89 (1997); Cook, R., WebbSalter, M.T., and Marshall, L. The significance of fibres found in head hair. *Forensic Sci. Int.* 87 (2) 155-160 (1997); Kelly, E. and Griffin, R. A target fibre study on seats in public houses. *Sci. Justice* 38 (1) 39-44 (1998); Wiggins, K., Drummond, P., and Champod, T.H. A study in relation to the random distribution of four fibre types on clothing – (incorporating a review of previous target fibre studies). *Sci. Justice* 44 (3) 141-148 (2004); Coyle, T., Shaw, C., and Stevens, L. The evidential value of fibres used in 'Hi-Vis'work wear. https://www.researchgate.net/publication/259325803_The_evidential_value_of_fibres_used_in_Hi-Vis_workwear; Palmer, R., Burnett, E., Luff, N., Wagner, C., Stinga, G., Carney, C., and Sheridan, K. The prevalence of two 'commonly' encountered synthetic target fibres within a large urban environment. *Sci. Justice* 55, 103-106 (2015).

[8] Grieve, M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.

[9] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 1, Section 5.5; Palmer, Ray; Chinherende, Vongai (1996). A Targer Fiber Study Using Cinema and Car Seats as Recipient Items. *Journal of Forensic Sciences*, 41: 802-803.; Wiggins, K; Drummond, P; and Champod, T Hicks (2004), A study in relation to the random distribution of four fibre types on clothing (incorporating a review of previous target fibre studies), *Science and Justice*, 44: 141-148.

[10] Houck, M. (2003) Inter-comparison of unrelated fiber evidence, *Forensic Science International*, 135: 146-149.

[11] *Id.* at 148-149.

[12] Grieve,M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.



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One explanation for this variance is the variety of different fibers that are produced based on the textile industry's requirements for specific end-use and performance. The textile industry is comprised of thousands of fiber manufacturers and textile mills worldwide, and is constantly changing to satisfy demand and expected performance.[13] These manufacturers produce fibers of various type, size, and cross-sectional shape, and introduce other microscopic characteristics through the manufacturing and/or finishing process (*e.g.*, delustering, voids, birefringence, mercerizing, texturing), typically for a desired result in the end-product.[14] Another contributing factor to variance in the fiber population is the dyeing process, in which color is added to either the fiber, yarn, fabric, or textile. There are thousands of dyes available for textiles, and the specific color requested by a consumer is usually achieved using a combination of dyes. Studies have shown that even different dye batches of the same product type can be distinguished.[15] Consumer use and wear of the textile product also accounts for some of the variance in the fiber population. Sunlight exposure, laundering, and other environmental effects can have an impact on the fiber's microscopic characteristics and optical properties.[16]

Ironically, the variance described above that makes fiber associations meaningful also complicates interpreting its significance. Studies have demonstrated that variation in the microscopic characteristics and optical properties of fibers provides meaningful comparisons.[17] However, due to the many variables involved, the specific number of sources that exhibit the same microscopic characteristics and optical properties as a questioned fiber cannot be determined.

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[13] World Directory of Manufactured Fiber Producers, Fiber Economics Bureau, Arlington, VA; Davison's Textile Blue Book, Davison Publishing Co., Inc, Concord, NC.

[14] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49. Hatch, K.L. (1993). Textile Science, West Publishing Company, St. Paul, MN.

[15] Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 10; Palmer, R. (1995). A Survey of Dye Batch Variation, *Science and Justice*. 35, 59-64.; Wiggins, K., Cook, R. and Turner Y. (1988). Dye Batche Variation in Textile Fibers, Journal of forensic Sciences, 33:4, pp. 998-1007.; Wiggins, K. and Holmes, J.A. (2005). A further study of dye batch variation in textile and carpet fibres. *Science and Justice*, 45:2, 94-96.

[16] American Association of Textile Chemist and Colorists, AATCC Technical Manual, Research Triangle Park, N.C.; Was-Gubala, J. (2009). The kinetics of colour change in textiles and fibres treated with detergent solutions Part I – Colour perception and fluorescence microscopy analysis. *Science and Justice*, 49, 165-169. Was-Gubala, J., Grzesiak, E. (2010). The kinetics of colour change in textiles and fibres treated with detergent solutions Part II – Spectrophotometric measurements. *Science and Justice*, 50, 55-58.

[17] Grieve, M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.; Houck, Max (2003) Inter-comparison of unrelated fiber evidence, *Forensic Science International*, 135: 146-149.; Palmer, R., Hutchinson, W., Fryer, V. (2009). The discrimination of (non-denim) blue cotton. *Science & Justice*, 49, 12-18.; Palmer , Ray; Chinherende, Vongai (1996). A ~~Targer~~ Target Fiber Study Using Cinema and Car Seats as Recipient Items. *Journal of Forensic Sciences*, 41: 802-803.

**Textile Fiber Comparison Process**

There are different methodologies and processes for conducting a fiber examination. The Department shares information regarding some appropriate processes below. The Department does not suggest that the processes outlined here are the only valid or appropriate processes.

The general procedure for textile fiber comparisons begins with a side-by-side examination of the microscopic characteristics. A comparison microscope (approximately 50x- to 600x-magnification) is required to visualize and compare the microscopic characteristics. For natural fibers, characteristics such as color, surface color, color variation, shape, and diameter are compared. Additional characteristics such as the presence and size of voids, delustrant, manufacturing striations, pigment, and inclusions may be observed when comparing manufactured fibers (Figure 1).[18]

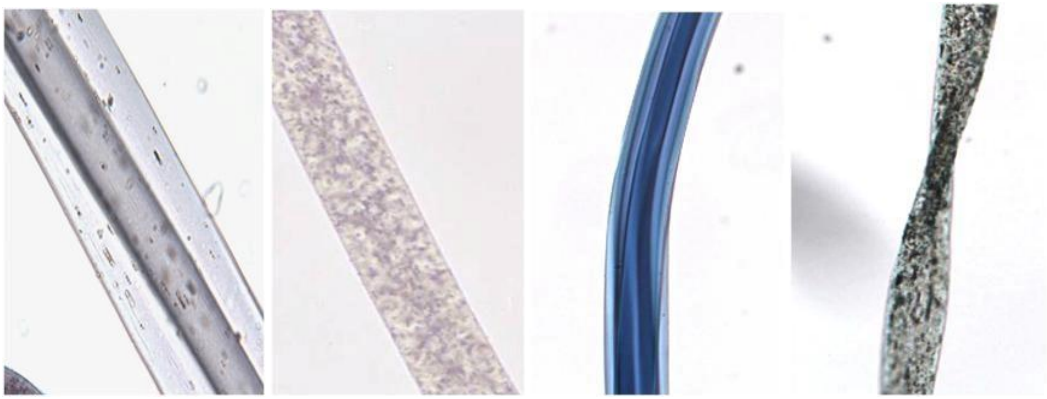

Figure 1: Images of manufactured fibers.

If fibers are indistinguishable utilizing comparison microscopy, they are further examined with polarized light microscopy. For natural and manufactured fibers, polarized light microscopy can determine if the fibers display different colors when viewed at different orientations to polarized light.[19] For manufactured fibers, characteristics such as the relative refractive index[20] and estimated birefringence[21] are also compared. The properties observed

[18] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.

[19] Polarized light is light that has been altered so that vibrations occur in a single plane. A polarized light microscope is equipped with filters capable of producing polarized light.

[20] Refractive index is the ratio of the speed of light in a material compared to the speed of light in a vacuum. Textile fibers have two refractive indices, one parallel ($n_{\parallel}$) to the fiber axis and one perpendicular ($n_{\perp}$). These refractive indices are measured relative to the mounting medium the fibers are in when prepared on glass microscope slides (*e.g.*, Permount®).

depend on the type of fiber (*e.g*, polyester, nylon) and the orientation of the molecules along the fiber's axis.[22]

Fibers that are indistinguishable utilizing comparison microscopy and polarized light microscopy are further compared using fluorescence microscopy. Fluorescence is emission of light at a longer wavelength following excitation by light of shorter wavelength. With fluorescence microscopy, fibers are illuminated at four distinct wavelength ranges so that the color and intensity of the fiber's fluorescence can be documented and compared (Figure 2). Dyes, optical brighteners and other additives can contribute towards the observed fluorescence.[23]

Figure 2: Images of the same set of fibers viewed with A) transmitted light microscopy; B) fluorescence microscopy using 450nm-490nm excitation; C) fluorescence microscopy using 510nm – 560nm excitation.

If colored fibers cannot be distinguished utilizing comparison microscopy, polarized light microscopy, and fluorescence microscopy, they are further examined and compared with microspectrophotometry. Microspectrophometry (MSP) is used to compare the fiber's absorption of ultraviolet and/or visible light. This method provides an instrumental means for analyzing the fiber color, and can distinguish fibers that have the same visual color using comparison microscopy.[24]

[21] Birefringence is the difference between the fiber's refractive indices ($n_{\parallel} - n_{\perp}$). An estimated value of the birefringence can be calculated using a polarized light microscope that is equipped with two polarizing filters.

[22] Rochow, T.G. and Tucker, P.A. (1994). Introduction to Microscopy by Means of Light, Electrons, X Rays, or Acoustics, Plenum Publishing Corporation, New York, NY.; Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.

[23] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7.

[24] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 3.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 10.; Houck, M., Walbridge-Jones, S., (2009). Forensic Identification of textile fibers: Chapter 9 – Microspectrophotometry for textile fiber color measurement. The Textile Institute, Woodhead Publishing Limited, Cambridge, England.



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If manufactured fibers are not distinguished using the methods above, fibers will be examined using infrared spectroscopy. Infrared spectroscopy detects the fiber's absorption of infrared radiation. While the technique is typically not as discriminating as the techniques listed above, it provides additional information about the chemical structure of the fiber and allows for the characterization and comparison of polymer composition. Natural fibers are not examined using infrared spectroscopy since the technique provides no additional compositional information.[25]

If the fibers are indistinguishable utilizing the applicable techniques described above, it can be concluded that the fibers are consistent with originating from ~~the same item, or another~~ an item comprised of fibers that exhibit the same microscopic characteristics and optical properties. If the fibers can be distinguished using any of the techniques described above, it can be concluded that the fibers are not consistent with originating from an item with these same characteristics~~the same item~~.

## ~~Policy~~ Considerations for Analysis and Interpretation

In 2006, Congress authorized the National Academy of Sciences (NAS) to conduct a study on forensic science which culminated in a 2009 report.[26] The NAS report of 2009 reiterated the basis, benefit, and limitations for the long established forensic discipline of fiber analysis, specifically noting its use for the comparison of sample(s) to a class of fibers and its inability to be used for the individualized matching of a sample fiber to a single source:~~:~~

> Fibers associated with a crime—including synthetic fibers such as nylon, polyester and acrylic as well as botanical fibers such as ramie or jute, which are common in ropes or twines—can be examined microscopically in the same way as hairs, and with the same limitations. However, fibers also can be analyzed using the tools of analytical chemistry, which provide a more solid scientific footing than that underlying morphological examination. In some cases, clothing and carpets have been subjected to relatively distinctive environmental conditions (*e.g.*, sunlight exposure or laundering agents) that impart characteristics that can distinguish particular items from others from the same manufacturing lot. Fiber examiners agree, however, that none of these characteristics is suitable for individualizing fibers (associating a fiber from a crime scene with one, and only one, source) and that fiber evidence can be used only to associate a given fiber with a class of fibers.[27]

[25] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 6.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 8.

[26] ----. (2009). National Research Council. Strengthening Forensic Science in the United States: A Path Forward (Summary and Friction Ridge Analysis section from Chapter 5). National Academy Press: Washington, D.C. (http://www.nap.edu/catalog/12589 html).

[27] NAS report at 161, citing, *e.g.,* Breese, R.R. (1987) Evaluation of textile fiber evidence: A review. *J. For Sci.* 32 (2), 510-11; SWGMAT. (1999) Introduction to forensic fiber examination. *For. Sci. Comm.* 1 (1), available at www.fbi.gov/hq/lab/fsc/backissu/april1999/houcktoc.htm.



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The NAS report highlighted several areas for improvement within the generally accepted scientific standards of fiber analysis. It noted that there has been guidelines, "but no set standards for the number and quality of characteristics that must correspond in order to conclude that two come from the same manufacturing source." It also noted that there have been no studies of fiber variability during or after manufacturing, "no studies ~~One area it identified was that there "have been no studies~~ to inform judgments about whether environmentally related changes discerned in particular fibers are distinctive enough to reliably individualize their source"[28]. While it has been established that the environment can have an impact on the microscopic characteristics and optical properties of fibers,[29] it is doubtful that these changes would ever allow individualization to a single source.

A second area highlighted in the NAS report was that there "have been no studies that characterize either reliability or error rates in the procedures."[30] ~~While it is true that no studies have identified "error rates in the procedures" or studies to show the statistical probability of a coincidental fiber association, numerous studies (referenced previously) have been published demonstrating the reliability of fiber examination procedures.~~

The third point highlighted in the NAS summary is that understanding of measurement uncertainties is feasible, but has~~ve~~ not been developed for the various analytical procedures utilized by fiber examiners. For some of the analytic techniques, (e.g., those involving chemical analysis) there should be few impediments to conducting quantitative uncertainty analysis [33]

~~The NAS report also made the following assertion:~~

> ~~A group of experienced paint [*sic*] examiners, the Fiber Subgroup of the Scientific Working Group on Materials Analysis (SWGMAT), has produced guidelines, but no set standards, for the number and quality of characteristics that must correspond in order to conclude that two fibers came from the same manufacturing batch. There have been no studies of fibers (*e.g.*, the variability of their characteristics during and after manufacturing) on which to base such a threshold.~~[31]

~~SWGMAT has indeed produced guidelines covering the forensic examination of fibers. However, fiber examiners have long realized that associating fibers to a given dye (manufacturing) batch is a goal that cannot be reached. There have been a few studies demonstrating the ability to sometimes distinguish between different dye batches, however, fiber examiners cannot conclude that fibers came from the same batch since different batches cannot always be distinguished.~~[32]

~~The NAS report addressed the fact~~

[28] NAS report at 162-163.

[29] American Association of Textile Chemist and Colorists, AATCC Technical Manual, Research Triangle Park, N.C.; Was-Gubala, J. (2009). The kinetics of colour change in textiles and fibres treated with detergent solutions Part I – Colour perception and fluorescence microscopy analysis. *Science and Justice,* 49, 165-169. Was-Gubala, J., Grzesiak, E. (2010). The kinetics of colour change in textiles and fibres treated with detergent solutions Part II – Spectrophotometric measurements. *Science and Justice*, 50, 55-58.

[30] NAS report at 163.

[31] NAS report at 162-163.



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[32] Palmer, R. (1995). A Survey of Dye Batch Variation, *Science and Justice*. 35, 59-64.; Wiggins, K., Cook, R. and Turner Y. (1988). Dye Batch Variation in Textile Fibers, Journal of forensic Sciences, 33:4, pp. 998-1007; Wiggins, K. and Holmes, J.A. (2005). A further study of dye batch variation in textile and carpet fibres. *Science and Justice*, 45:2, 94-96.

[33] NAS report at 163, citing to Breese, R.R. (1987) Evaluation of textile fiber evidence: A review. *J. For Sci.* 32 (2), 510-11.

[34] NAS report at 163.

[35] *Id.*



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**PUBLIC COMMENT ON PROPOSED**
**UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**

**Committee for Public Counsel Services (CPCS), Boston, Massachusetts**
**Massachusetts Association of Criminal Defense Lawyers (MACDL), Boston, Massachusetts**

**July 8, 2016**

Comments on DOJ Proposed Uniform Language for Testimony and Reports
for Forensic Footwear and Tire Impression Discipline

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## I. Uniform Language

The ULTR does not provide clear guidance on the use of uniform language in testimony and reports. The current proposal's permissive, somewhat passive language (e.g., "may state or imply" and "may not state or imply") reproduces the historical problems of providing forensic analysts far too little guidance about how to express their opinions to judges and juries. This creates disparate opinions and language from case to case and analyst to analyst, and leaves room for misunderstanding and error. For ***approved statements***, we recommend changing "may state or imply" to "shall state or imply," and for ***statements not approved***, changing "may not state or imply" to "shall not state or imply."

Similarly, the ULTR should avoid ambiguity in its prescriptions to examiners. Presently, its guidance on **how** to include the language in reports and testimony is unclear. For example, in the "Identification" opinion section, instead of simply asserting "This opinion acknowledges that an identification to the exclusion of all others can never be empirically proven," we recommend that the language instruct personnel to affirmatively include such an acknowledgment in their opinions. Thus, the sentence should be changed to read, "The examiner's opinion must acknowledge . . ." This change is in accord with the stated purpose of the ULTR – making explicit to the DOJ personnel what must be communicated in reports or testimonies – and avoids language that is portrayed as conceptually inherent or implicit, and thus runs the risk of only being communicated upon request.

The number of possible opinions by footwear or tire impression examiners should be reduced to **three** categories for comparison opinions (e.g., inclusion or identification, exclusion or elimination, and inconclusive), and should retain the "unsuitable" or "insufficient" opinion for those evidentiary or known items that cannot be compared. This reduction is not intended to reduce an examiner's ability to explain the similarity or dissimilarity of a questioned impression's class characteristics or randomly acquired characteristic (RAC) with those in the known source. However, this change brings the opinions in footwear and tire tread impression examination in line with the ULTR for other types of forensic identification.

Additionally, as we recommend the categories of opinions should be reduced, the differences between an "identification or inclusion" and "inconclusive" opinion should be made


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more explicit than is currently proposed. For example, under the proposed ULTR, an "Identification" can be made with as few as **one** corresponding RAC, with **no** guidance as to what constitutes a "limitation[] which prevent[s] effecting an identification." *See e.g.*, SWGTREAD, *Guide for the Examination of Footwear and Tire Impression Evidence* ¶4 (March, 2006) ("Limitations can be due to substrate features, quality and quantity of original impressions and methods of collection."). Therefore, there is a stark danger that the proposed ULTR for non-identification opinions will create different opinions from examiner to examiner and laboratory to laboratory, with no clear agreement on the nature or number of limitations in making an association, or those needed to form an inconclusive opinion. This ULTR will inevitably lead to different examiners giving different opinions or explanations as to the quality or importance of "limitations" effecting an association, with some examiners valuing certain limitations over others. National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* 146 (2009) ("Identifications are largely subjective and are based on the examiner's experience and on the number of individual, identifying characteristics in common with a known standard.").

Lastly, the "Exclusion of All of Others" opinion contains a one-sided explanation for the reason an examiner cannot make this assertion. Including that "practical impossibility" explanation here, without providing greater context for the restriction on an examiner's opinion, may approve that explanation as the sole explanation for use by examiners if asked – in testimony or in writing – why an identification cannot be made to the exclusion of all others. Moreover, while a properly trained examiner may know that "practical impossibility" is not the sole reason this opinion is not approved, the inclusion of only this explanation creates an impermissible inference to the contrary. If the ULTR in this sub-category is to provide an examiner with an explanation for **why** the examiner cannot assert that a source is linked to the questioned impression to the exclusion of all others, the approved language should also note that there have been insufficient studies to permit an opinion on the statistical rarity of shoe and tire impressions. *See* NRC at 147 ("[N]or are there any studies that associate the number of matching characteristics with the probability that the impressions were made by a common source"); *id.* at 149 ("[T]he committee is not aware of any data about the variability of class or individual characteristics."); and SWGTREAD, *Range of Conclusions Standard for Footwear and Tire Impression Examinations* ¶5 (March, 2013) ("Accurate and reliable data and/or statistical models for use in calculations do not currently exist. Therefore, SWGTREAD does not support the use of statistics to determine the strength of conclusions related to shoe and tire impression evidence at this time.").

## II. Supporting Documentation

On the whole, the Supporting Documentation section should include additional information to aide examiners in giving approved opinions and explanations in their reports and testimony. Specifically, we recommend the addition of the following:

- In the "Theory" section, where they Supporting Documentation describes how outsoles and tire treads are produced and impressions are left, there should be some discussion about manufacturers making **different molds** for the same shoe or tire design, as well as the existence of **counterfeit molds**. *See Materials Analysis in*



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*Forensic Science* 411 (M. Houck, 1st ed. 2016).

- As with the proposed language, this section should include guidance on the "**limitations**" that may prevent an identification. This addition is made all the more necessary as the proposed language section references "limitations" as being a part of an examiner's analysis and opinion, but the Supporting Documentation section does not mention or describe these limitations.

- The Supporting Documentation section should reference the effect of **cognitive bias** and **biasing information on an examiner's analysis**. Despite several studies of the pernicious impact of unacknowledged bias in forensic analyses, this section makes no mention of bias or biasing information. Therefore, as the Supporting Documentation section describes the processes for shoe/tire comparison, it should also describe the role of cognitive bias and specify how to limit the impact of bias in an examiner's analysis. *See* NRC at 122 (*citing* M.J. Saks et al, *Context Effects in Forensic Science: A Review and Application of the Science of Science to Crime Laboratory Practice in the United States*, 43 Science and Justice 77-90 (2003)). The National Academy Science's 2009 report, cited in this section, provides a thorough discussion of cognitive bias and its effects on forensic examiners and their conclusions. *See e.g.,* NRC at 122-124. Much of this language could be included in this section.

  As the footwear and tire impression analysis often utilizes the same "ACE-V" methodology as latent print analysis, this section should include, in the "Footwear and Tire Comparison Process" subsection, specific steps that researchers have identified reduce cognitive bias involved with the ACE-V methodology, such as the need for blind verification that involves sequential unmasking of case-related information. *See e.g.*, National Institute of Standards and Technology, *Latent Print Examination and Human Factors: Improving the Practice Through a Systems Approach* 12 (2012) ("[B]lind verification shields the verifying examiner from contextual bias that might otherwise affect the outcome in difficult cases. The Noblis-FBI experiment . . . indicated 'that blind verification of exclusions could greatly reduce false negative errors.'") (quoting B. Ulery et al, "Accuracy and Reliability of Forensic Latent Fingerprint Decisions," *Proceedings of the NAS* (2011)).

- The "Policy Considerations" subsection should include an explanation that supports the proposed language prohibiting an examiner from assigning a numerical value or percentage to an error rate, and, as recommended, from reporting or testifying conceptually about the lack of a known error rate.

- Although the Supporting Documentation section is heavily cited, there are numerous assertions made without **proper citation**. Citations should accompany every factual assertion, to guide examiners in their use of language and explanation in reports and testimonies. Additionally, the existing citations should be edited for clarity.



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As the Supporting Documentation section explains in some detail what **should be** assessed by an examiner analyzing a questioned impression for class characteristics, and makes suggestions as to **how** the assessment should proceed, adding the information noted above will provide a more thorough explanation of the fields' underlying theory, examination processes, and limitations. These additions are not intended to modify the Supporting Documentation's provision regarding the non-mandatory nature of this section's suggestions.

**This document provides examples of the scientifically-supported conclusions and opinions that may be contained in Department of Justice reports and testimony. These examples are not intended to be all inclusive and may be dependent upon the precedent set by the judge or locality in which a testimony is provided. Further, these examples are not intended to serve as precedent for other forensic laboratories and do not imply that statements by other forensic laboratories are incorrect, indefensible, or erroneous. 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 and litigative prerogatives of the Department.**

# DEPARTMENT OF JUSTICE
# PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE FORENSIC FOOTWEAR AND TIRE IMPRESSION DISCIPLINE

## Purpose and Scope

If adopted, this document will apply to Department of Justice personnel who perform forensic examinations and/or provide expert witness testimony regarding the forensic examination of footwear/tire impression evidence. This document does not imply that statements made or language used by Department personnel that differed from these proposed statements were incorrect, indefensible, or erroneous.

This document provides the acceptable range of opinions expressed in both laboratory reports and during expert witness testimony while acknowledging that this document cannot address every variable in every examination.

## Statements Approved for Use in Laboratory Reports and Expert Witness Testimony Regarding Forensic Examination of Footwear and Tire Impression Evidence

The following is the range of opinions approved for use by the examiner in both laboratory reports and when providing expert witness testimony.

### Identification

1. The examiner ~~may~~should state that it is his/her opinion that the shoe/tire is the source of the impression because there is sufficient quality and quantity of corresponding features such that the examiner would not expect to find that same combination of features repeated in another source. This is the highest degree of association between a questioned impression and a known source. This opinion requires that the questioned impression and the known source correspond in class characteristics and also share one or more randomly acquired characteristics. The~~e~~is examiner's opinion must acknowledge~~s~~ that an identification to the exclusion of all others can never be empirically proven.



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~~**Probably Made**~~

~~2. The examiner may state that it is his/her opinion that the shoe/tire probably made the impression and it is unlikely that another shoe/tire is the source of the impression; however, there are limitations which prevent effecting an identification. This opinion indicates a high degree of association between the questioned impression and the known source, which is based on the correspondence of class characteristics in combination with specific wear and/or randomly acquired characteristics.~~

~~**Could Have Made**~~

~~3. The examiner may state that it is his/her opinion that the shoe/tire is a possible source of the impression, but other shoes/tires with the same class characteristics are also included in the population of possible sources. This opinion indicates an association of class characteristics (i.e., outsole design and physical size for shoes, tread design and tread dimension for tires) between the questioned impression and the known source. Correspondence of general wear may also be present.~~

**Could Not Be Determined**

4. The examiner ~~may~~ should state that it is his/her opinion that it could not be determined if the known shoe/tire is the source of the impression. This opinion indicates that similarities and/or differences in class characteristics were ~~not~~observed between the questioned impression and the known source, but there are ~~significant~~ limiting factors within the evidence that do not allow for a specific association or non-association, which is based on the correspondence of class characteristics in combination with specific wear and/or randomly acquired characteristics.~~.~~ Such limitations could include the quality of the questioned impression as deposited or collected, [others].

~~**Indications Did Not Make**~~

~~5. The examiner may state that it is his/her opinion that the evidence indicates that the shoe/tire is not the source of the impression, but there are limitations which prevent eliminating the shoe/tire. This opinion indicates a degree of non-association between the questioned impression and the known source, which is based on observed dissimilarities.~~

**Elimination**

6. The examiner should~~may~~ state that the shoe/tire is not the source of the impression. This opinion is the highest degree of non-association between a questioned impression and a known source. This opinion requires an observable difference in class and/or randomly acquired characteristics between the questioned impression and the known source.

**Unsuitable**

7. The examiner may state that it is his/her opinion that the submitted evidence is unsuitable to conduct footwear/tire examinations. This opinion indicates one of the following: there

are significant limitations which prevent the examiner from conducting a meaningful comparison between the questioned impression and the known source; or no discernible footwear/tire impressions were observed on the questioned item which prevents the examiner from conducting any comparisons.

**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony Regarding Forensic Examination of Footwear and Tire Impression Evidence**

The following are not approved for use by the examiner; however, it is acknowledged that there may be circumstances outside the control of the examiner, such as in courts of law, that require the examiner to deviate from the statements set forth below.

**Exclusion of All of Others**

1. The examiner ~~may~~shall not state or imply that a shoe/tire is the source of a questioned impression to the exclusion of all other shoes/tires because all other shoes/tires have not been examined. Examining all of the shoes/tires in the world is a practical impossibility, and there have been insufficient studies on the statistical rarity of different shoe/tire impressions.

**Error Rate**

2. The examiner ~~may~~shall not state or imply a numerical value or percentage regarding the error rate associated with either the opinion itself, the methodology used to conduct the examinations, or the examiner who conducted the analyses. This prohibition also applies to any assertion regarding the lack of a known error rate associated with an opinion, methodology or examiner.

**Statistical Weight**

3. The examiner ~~may~~shall not state or imply a numerical value or probability associated with his/her opinion. Accurate and reliable data and/or statistical models do not currently exist for making quantitative determinations regarding the forensic examination of footwear/tire impression evidence.

**DEPARTMENT OF JUSTICE PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS REVIEW SHEET**

**Directions:** This review sheet is designed to assist you in evaluating the attached Proposed Uniform Language for Testimony and Reports document against certain criteria while maintaining internal consistency in review and assessing comments.

Your use of this rating sheet is completely **optional**. While it is anticipated this review sheet will encourage comments on issues of particular importance, you are welcome to submit comments in any format that you believe appropriate. This review sheet is not intended to limit comments in any way.

If you elect to use the review sheet, you may find it helpful to frame your comments as suggested below.

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**Proposed Uniform Language Discipline Reviewed: Reviewer Name:**
**Reviewer Organization:**

**Statements Approved for Use in Laboratory Reports and Expert Witness Testimony**
Provide a summary of your assessment of the statements approved for use, including the most important highlights from the individual criteria comments.

- The statements approved for use are supported by scientific research.
- The statements approved for use accurately reflect consensus language.
- The statements approved for use are stated clearly.

**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony**
Provide a summary of your assessment of the statements not approved for use, including the most important highlights from the individual criteria comments.

- The statements not approved for use are supported by scientific research.
- The statements not approved for use accurately reflect consensus language.
- The statements not approved for use are stated clearly.

**This document sets forth background materials on the scientific research supporting examinations as conducted by the forensic laboratories at the Department of Justice. It also includes a discussion of significant policy matters. This document is provided to assist a public review and comment process of the related Proposed Uniform Language for Testimony and Reports (posted separately). It 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 and litigative prerogatives of the Department.**

## SUPPORTING DOCUMENTATION FOR DEPARTMENT OF JUSTICE PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE FORENSIC FOOTWEAR AND TIRE IMPRESSION DISCIPLINE

### Background

The origin of the principles used in the forensic analysis of footwear and tire impression evidence dates back to when man began hunting animals. At that time, hunters realized that different animals made different tracks and they used this information to identify the type of animal. Using this same premise, investigators began associating patterns observed in impressions at the crime scene with features on the suspects' footwear and tires. The earliest known legal case proceedings where track evidence was used to solve crime dates back to 1786.[1]

Limited information is available on footwear and tire impression evidence prior to the early 1930s but the information available indicates that this type of evidence was collected and analyzed both in the United States and abroad. Much of the early information concerning footwear and tire impression evidence comes from state and local cases.

Comment [IG1]: Citation needed

The FBI Laboratory began analyzing footwear and tire impression evidence in the early 1930s. Most of the analysis by the FBI at this time involved conducting database/file searches to determine the make and model of a shoe or tire that could have made a specific crime scene impression.[2] By the mid-1930s, there were over 200 outsoles in the FBI's shoe print file along with 1800 patterns in the tire tread file. From the 1930s to the 1960s, the analysis of footwear and tire impression evidence was expanded beyond the outsole design or tread pattern to include physical size and spacing (footwear), tread dimensions (tires), wear, and randomly acquired characteristics.[3]

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[1] Chambers' Edinburgh Journal. No. 6, Saturday, March 10, 1832. According to records, this crime occurred in September, 1786. A suspect was indicted and was advised his shoes and the results of a footwear comparison conducted by the investigator in the case would be used against him at trial. The investigator used a piece of paper to make a life-size cut-out from one of the crime scene impressions. His cut-out made note of "nicks" in the heel area. The cut-out was used to compare against the shoes of a number of other individuals, including the suspect. The investigator identified the suspect's shoe as the source of the impression. This case is generally regarded as the first forensic footwear comparison case.

[2] Footprints and Tire Tread Suggested Procedure in Obtaining Specimen Reproductions for Laboratory Examinations. *FBI Law Enforcement Bulletin*. Vol. 10, No. 8, August 1941, pp. 21-30.

[3] Footprint Examinations and the FBI Rubber Footwear File. *FBI Law Enforcement Bulletin*. Vol. 14, No. 3, March 1945, pp. 7-9.

Today, footwear and tire impression evidence is routinely collected and examined by law enforcement agencies worldwide. In the U.S., examinations of this type of evidence are normally conducted as a sub-discipline within other sections of the forensic laboratory, including trace evidence, fingerprints, questioned documents, and firearms.

Comment [IG2]: Citation needed.

**Theory of Footwear and Tire Impression Examinations**

Footwear outsoles and tire treads are produced using molds.[4] Each mold is used to mass produce outsoles/treads of the same design and the same size. Although outsoles/treads that are manufactured from the same mold look the same, their features change as they come into contact with a variety of bearing surfaces.[5] Due to this contact, frictional and abrasive forces begin to create wear on the outsole/tread surface. As this wear continues, the outsole/tread surface becomes susceptible to damage. This damage includes nicks, cuts, scratches, and gouges. Stones, rocks, nails, and other items can also become wedged within grooves that are part of many outsole/tread designs. In addition, gum, tape, and other materials can adhere to the outsole/tread surface as well. The damage and/or items that can be found on outsoles/treads are referred to as randomly acquired characteristics (RACs)[6] as they occur by happenstance.

As a shoe or tire comes into contact with a bearing surface, this results in a two-dimensional (2D) or three-dimensional (3D) impression being left on the bearing surface. In a 2D impression, the dust, dirt, grease, blood or other residue previously acquired by an outsole is deposited on a bearing surface in the form of a footwear or tire impression.[7] In a 3D impression, an

[4] Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition.* CRC Press: Boca Raton, FL, 2000, pp. 197-278; Bodziak, W. *Tire Tread and Tire Track Evidence Recovery and Forensic Examination.* CRC Press: Boca Raton, FL, 2008, pp. 119-137; Cassidy, M.J. *Footwear Identification*. Canadian Government Publishing Centre: Ottawa, Canada, 1980, pp. 67-89; McDonald, P. *Tire Imprint Evidence*. Elsevier Science Publishing Co., Inc.: New York, NY, 1989, pp. 1-19; Nause, L. *Forensic Tire Impression Identification*. National Research Council of Canada Reprographic Services: Ottawa, Canada, 2001, pp. 171-187.

[5] A bearing surface is the surface that receives contact from the outsole of an item of footwear or the tread of a tire; *see also* Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition.* CRC Press: Boca Raton, FL, 2000, pp. 307-328; Bodziak, W. *Tire Tread and Tire Track Evidence Recovery and Forensic Examination.* CRC Press: Boca Raton, FL, 2008, pp. 193-208; Given, B. et al. *Tire Tracks and Tread Marks*. Gulf Publishing Company: Houston, TX, 1977, pp. 44-46; Nause, L. *Forensic Tire Impression Identification*. National Research Council of Canada Reprographic Services: Ottawa, Canada, 2001, pp. 227-234; Bodziak, W. et al (2012). Determining the Significance of Outsole Wear Characteristics During the Forensic Examination of Footwear Impression Evidence *Journal of Forensic Identification* 62(3): 254-276; Davis, R.J., et al (1977). A Survey of Men's Footwear. *Journal of the Forensic Science Society* 17(4): 271-285; Fruchtenicht, T.L. et al (2002). The Discrimination of Two-dimensional Military Boot Impressions Based on Wear Patterns. *Science & Justice* 42(2): 97-104; U.S. Department of Transportation, National Highway Traffic Safety Administration. *The Pneumatic Tire*. DOT Publication No. HS 810 561, 2006, pp. 231-285 and 533-593.

[6] SWGTREAD. Standard for Terminology Used for Forensic Footwear and Tire Impression Evidence, March, 2013. http://www.swgtread.org/images/documents/standards/published/swgtread_15_terminology_evidence_201303.pdf.

[7] Abbott, J.R. *Footwear Evidence*. Charles C. Thomas: Springfield, IL, 1964, pp. 58-59; Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition.* CRC Press: Boca Raton, FL, 2000, pp. 8-17; Bodziak, W. *Tire Tread and Tire Track Evidence Recovery and Forensic Examination.* CRC Press: Boca Raton, FL, 2008, p. 49; Cassidy, M.J. *Footwear Identification*. Canadian Government Publishing Centre: Ottawa, Canada, 1980, pp. 41-65.

outsole/tread causes a deformation of the bearing surface, resulting in a footwear/tire impression that has the added dimension of depth. 3D impressions are typically found in snow, sand, soil, and mud.[8]

The resulting 2D and 3D impressions can be compared directly to the outsole of an item of footwear or the tread of a tire. These comparisons are conducted utilizing two techniques: side-by-side comparison and superimposition.[9] Side-by-side comparison involves a direct comparison of features found in the footwear/tire impression to features found on a known item of footwear or tire. Superimposition involves the use of a test impression (prepared from a known item of footwear or tire) placed over the footwear/tire impression (recovered from the crime scene) to assess the correspondence in class characteristics and randomly acquired characteristics. The size, shape, and position of each randomly acquired characteristic are assessed by the examiner.[10]

In general, footwear and tire examinations follow a deductive process wherein all footwear and tires in the world are potential sources of a particular footwear/tire impression. By applying the methods of superimposition and side-by-side comparison to assess the correspondence of design, physical size/spacing, and wear, an examiner can reduce the potential sources of an impression to a class of potential sources.[11] The examiner can continue to narrow the potential sources by assessing the size, shape, and position of each randomly acquired characteristic that is observed in the crime scene impression. If these randomly acquired characteristics are also present on the known outsole/tread surface, then an examiner can identify a specific item of footwear/tire as the source of the footwear/tire impression.[12]

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[8] Abbott, J.R. *Footwear Evidence*. Charles C. Thomas: Springfield, IL, 1964, pp. 59-61; Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition*. CRC Press: Boca Raton, FL, 2000, pp. 8, 59-60; Bodziak, W. *Tire Tread and Tire Track Evidence Recovery and Forensic Examination*. CRC Press: Boca Raton, FL, 2008, p. 67; Cassidy, M.J. *Footwear Identification*. Canadian Government Publishing Centre: Ottawa, Canada, 1980, pp. 7-40.

[9] Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition*. CRC Press: Boca Raton, FL, 2000, p. 366; SWGTREAD. Standard for Terminology Used for Forensic Footwear and Tire Impression Evidence, March, 2013 http://www.swgtread.org/images/documents/standards/published/swgtread_15_terminology_evidence_201303.pdf

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[10] Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition*. CRC Press: Boca Raton, FL, 2000, p. 335.

[11] Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition*. CRC Press: Boca Raton, FL, 2000, pp. 319-335, 366-371; Bodziak, W. *Tire Tread and Tire Track Evidence Recovery and Forensic Examination*. CRC Press: Boca Raton, FL, 2008, pp. 228-247; Cassidy, M.J. *Footwear Identification*. Canadian Government Publishing Centre: Ottawa, Canada, 1980, p. 92; Nause, L. *Forensic Tire Impression Identification*. National Research Council of Canada Reprographic Services: Ottawa, Canada, 2001, pp. 171-187; Benedict, I., et al. (2014). Geographical Variation of Shoeprint Comparison Class Correspondences. *Science & Justice* 54(5): 335-337; Gross, S., et al. (2013). The Variability and Significance of Class Characteristics in Footwear Impressions. *Journal of Forensic Identification* 63(3): 332-351.

[12] Cassidy, M.J. *Footwear Identification*. Canadian Government Publishing Centre: Ottawa, Canada, 1980, pp. 98-108; Adair, T., et al. (2007). The Mount Bierstadt Study: An Experiment in Unique Damage Formation in Footwear. *Journal of Forensic Identification* 57(2): 199-205; Banks, R., et al. Evaluation of the Random Nature of Acquired Marks on Footwear Outsoles. Research presented at Impression & Pattern Evidence Symposium, August 4, 2010, Clearwater, FL; Stone, R. (2006). Footwear Examinations: Mathematical Probabilities of Theoretical Individual Characteristics. *Journal of Forensic Identification* 56(4): 577-599; Wilson, H. (2012). Comparison of the Individual Characteristics in the Outsoles of Thirty-Nine Pairs of Adidas Supernova Classic Shoes. *Journal of Forensic*

**Footwear and Tire Comparison Process**

There are different methodologies and processes for conducting a footwear or tire impression examination. The Department shares information regarding some appropriate processes below. The Department does not suggest that the processes outlined here are the only valid or appropriate processes. (Note: footwear includes any type of item worn on the foot, including shoes, boots and sandals.)

**Step 1**
The questioned impression is assessed to determine if there are sufficient gross design features observed to conduct a comparison. If there is insufficient detail and clarity observed in the questioned impression, no comparison will be conducted. To guard against examiner bias, the known source should not be assessed until after the questioned impression has been assessed and determined to have sufficient detail and clarity for a comparison.

**Step 2**
If sufficient detail and clarity are observed in the questioned impression, then a comparison will be conducted. The questioned and known specimens are compared to determine whether or not the gross design features correspond. If they correspond, then test impressions may be prepared from the known footwear or tires.

Four areas are compared during this step of the examination process utilizing the methods of side-by-side comparison and superimposition.

*Footwear:*[13]
1. Outsole design (pattern on bottom of the footwear)
2. Physical size and spacing (of geometric shapes that comprise the outsole design)
3. Wear (results from contact between the outsole and the bearing surface)
4. Randomly acquired characteristics (occur by happenstance)

*Tires:*[14]
1. Tread design (tread pattern on the tire)
2. Tread dimension (physical size and arrangement of geometric shapes that comprise tread design)
3. Wear (results from contact between the tread surface and the bearing surface)
4. Randomly acquired characteristics (occur by happenstance)

**Step 3**

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*Identification* 62(3): 194-203.

[13] Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition.* CRC Press: Boca Raton, FL, 2000, p. 367.

[14] Bodziak, W. *Tire Tread and Tire Track Evidence Recovery and Forensic Examination.* CRC Press: Boca Raton, FL, 2008, p. 228.

Once the comparison step is complete, an evaluation of the observed characteristics is performed and is used by the examiner to formulate an opinion. Generally, the examiner can reach an opinion within the following range of conclusions: identification, probably made, could have made, could not be determined, indications did not make, elimination and unsuitable.

**Step 4**

The final step of the examination process is an independent technical review of the case. In this step, another qualified footwear/ tire examiner will ensure that the results are technically accurate, fall within the appropriate range of conclusions, and that the associated case notes/documentation supports the results.

To limit the effects of cognitive bias, this independent review should be "blind" and practice sequential unmasking, where more contextual information about the case is revealed at each step of the review.

1. For the review of the technical accuracy of the results, the reviewing examiner should be blind: i.e., have no prior knowledge of the case, nor the identity of the initial examiner or that examiner's opinion. Only case notes/documentation that describe the deposit, observation, or collection of the impression or known source should be considered at this stage.

2. Once the examiner has independently assessed the questioned impression and known source and formed an independent opinion, the reviewing examiner can determine whether the initial examiner's opinion falls within the appropriate range of conclusions.

3. Lastly, having formed an opinion and assessed the initial examiner's conclusion the reviewing examiner can review the associated case notes/documentation for accuracy in forming a final opinion.

Additionally, to further limit bias and error, the Department's divisions that perform footwear and tire impression analysis should develop a verification process that includes the random and blind review of known exclusions as well as the identifications made in casework by initial examienrs.

Prior to the report of examination being issued, an administrative review is also conducted to ensure accuracy and adherence to established practices and procedures, and for spelling and grammatical accuracy. The footwear/tire examiners at the Department conduct their examinations in accordance with their own agency's quality management documents and standards. However, the administrative review should be performed by a separate person than the independent examiner who performed a technical review of the case.

The above process on footwear/tire examinations adheres to published recommendations of the Scientific Working Group for Shoeprint and Tire Tread Evidence (SWGTREAD). SWGTREAD, which is composed of private examiners and government examiners in local, state, and federal laboratories throughout the United States and also internationally, has developed standards and guidelines in the field of footwear/tire examinations.

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**Policy Considerations**

In 2006, Congress authorized the National Academy of Sciences (NAS) to conduct a study on forensic science which culminated in a 2009 report.[15] While the NAS committee determined that "shoeprints and tire tracks are common types of impression evidence examined by forensic examiners," the committee raised several criticisms pertaining to the footwear/tire discipline, including that "there is no consensus regarding the number of individual characteristics needed to make a positive identification, and the committee is not aware of any data about the variability of class or individual characteristics."[16] The discipline has no defined threshold or number of individual characteristics (aka RACs) required to effect an identification. The size, shape, position, and orientation of each RAC is evaluated in arriving at an identification conclusion.[17] The report continues that "neither IAI nor SWGTREAD addresses the issue of what critical research should be done or by whom".[18] Subsequently, SWGTREAD published a list of research ideas specific to the footwear/tire impression discipline on its website.[19] The committee also noted that "[w]ith regard to reporting, SWGTREAD is moving toward the use of standard language to convey the conclusions reached."[20]

**Comment [IG3]:** Presumably, the "Id" citation in this footnote refers to the NAS Report, and not the current previous citation to Bodziak.

**Comment [IG4]:** Same as our previous comment. The "id" here is presumably referring to the NAS Report, and not the previous citation.

[15] National Research Council (2009). Strengthening Forensic Science in the United States: A Path Forward National Academy Press: Washington, D.C. http://www.nap.edu/catalog/12589.html.

[16] *Id.* at 149.

[17] Bodziak, W. *Footwear Impression Evidence Detection, Recovery, and Examination 2nd Edition.* CRC Press: Boca Raton, FL, 2000, p. 344.

[18] *Id.* at 150.

[19] SWGTREAD. Recommendations for Research. http://swgtread.org/research/recommendations-for-research.

[20] *Id.* at 150, citing SWGTREAD. 2006. *Standard Terminology for Expressing Conclusions of Forensic Footwear and Tire Impression Examinations.* Available at http://www.swgtread.org/documents/PDF%20copy/10_terminology_expressing_conclusions_03-2006.pdf.

**PUBLIC COMMENT ON PROPOSED**
**UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**

**The Staff of the Committee for Public Counsel Services (CPCS), Boston, Massachusetts**
**Massachusetts Association of Criminal Defense Lawyers (MACDL), Boston, Massachusetts**

**July 8, 2016**

Comments on DOJ Proposed Uniform Language for Testimony and Reports for the Forensic Glass Discipline.

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## I. Uniform Language

The clarity of the uniform language is of the utmost importance. The recommended conclusions must be descriptive in not only the result obtained but also in how that conclusion is to be applied to the case. While the ULTR document is only a list of uniform language, it is important to note that the work going into the report and testimony is going to vary from lab to lab and even from case to case, due to the ULTR not endorsing what types of testing or procedures are proper in the field of forensic glass analysis. It is therefore vital to address the potential differences in the analytical work performed in various labs by limiting the possible opinions presentable.

The number of possible opinions by glass examiners should be reduced to **three** categories for comparison opinions (e.g., inclusion or identification, exclusion or elimination, and inconclusive), and should retain the "unsuitable" or "insufficient" opinion for those evidentiary or known items that cannot be compared. This reduction is not intended to reduce an examiner's ability to explain the similarity or dissimilarity of questioned glass evidence with the glass from a known source. However, this change will bring the opinions of forensic glass examination in line with the ULTR for other types of forensic identification.

For the first category of inclusive results, it may still be appropriate for the ULTR to allow a conclusion "that the glass fragments were once part of the same broken object." The ULTR must continue to require a physical fit of two samples to allow the finding of a single source for the glass fragments. However, there are no standards presented in this document, or in the supporting documentation that defines, standardizes, or otherwise justifies the finding of a physical fit. It is important the ULTR provide examiners guidance on **when** this "fit" is attempted and **how** to weigh the "fit." If the two pieces are deduced to "fit" by whatever means the examiner thinks appropriate, the ULTR and supporting documents should make clear that the analysis must still continue until all analytical testing planned or available is performed. As there is a potentially subjective component to the "fit," completing the rest of the analytical work (i.e., physical assessments and chemical/elemental testing) should be required and articulated in the ULTR to justify the use of the highest possible association between the evidence. Otherwise, it is possible that an examiner could base an approved opinion on contextual information instead of articulated standards for weighing the "fit."



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The ULTRs for an inclusive finding without a physical fit require that all physical and chemical properties and measurements are identical. However, again, it is noted that the specific standards and methods required to draw such a conclusion are inadequately described. The finding allows an analyst to state "that the glass fragments either originated from the same broken glass source or from another source(s) of broken glass indistinguishable in all of the measured or observed physical properties, refractive index, and elemental composition. This conclusion is reached when two or more broken glass fragments are indistinguishable in their assessed physical characteristics, refractive index and chemical composition." But, the actual properties and tests used are seemingly left to the laboratory to determine. What testing is sufficient for this seeming strong conclusion? Is just a refractive index (physical property) and elemental composition (chemical test) enough? What are the required measurements and the acceptable uncertainties?

This conclusion is likely to be seen as the equivalent of the positive match or determination of a single source. This is not necessarily a supportable inference. Without data regarding the probability of two unrelated glass fragments having the same characteristics, and scientifically sound consideration of the measurements involved (sensitivity, uncertainty, and other values), it is far more prudent to state that the fragments, "either originated from the same broken glass source or from another source(s) of broken glass consistent in all of the measured or observed physical properties, refractive index, and elemental composition."

The next potential conclusion presented in the ULTR is one "that the possibility that the glass fragments originated from the same source of broken glass cannot be eliminated. This conclusion is reached when two or more fragments of glass are indistinguishable in their physical characteristics and refractive indices but chemical analysis was not performed." The use of "indistinguishable" in both of these conclusions links them in a way that, ironically, fails to distinguish them. The use of the term is inappropriate here, if only because one method of possible comparison which would indeed potentially distinguish the two, a chemical and elemental analysis, has not been performed. Hence, "indistinguishable" is certainly NOT an appropriate term for two pieces that have not been tested to determine their elemental composition. The chemical and elemental analysis is arguably the most important way to discriminate between glass objects and the absence of that testing, by necessity, makes the association of the two less certain by orders of magnitude.

This is not an inclusive finding, but actually an <u>inconclusive</u> one. The possibility of a shared source cannot be eliminated. The use of the phrase "cannot be eliminated" certainly indicates more doubt than the "same or indistinguishable" from the conclusion above, so the claim that an inclusion was found, based merely on the tested for physical properties, is potentially unsupportable. The samples apparently have consistent physical properties, but the value of that determination is only as strong as the testing performed and the probabilities involved in the sampling. Therefore, this conclusion should be clearly defined as an inconclusive or indeterminate one, with the consistent findings detailed in the report.

The other conclusions (indeterminate or untested and excluded) are less problematic, but the basis for such conclusions must be clearly detailed in the report. If the analyst concludes the sample is untestable and of no evidentiary value, that decision most also be documented, justified and reviewable. The ULTR should also make it clear that a conclusion of indeterminate or no



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evidentiary value is only appropriate if the suspect glass not only lacks inclusive features, but also has no features that might yield an exclusionary result.

Finally, the use of probability language when forming or explaining an opinion should be prohibited in the ULTR. The FBI itself states (on the webpage mentioned in the supporting documents section), "Databases of refractive indices and/or chemical compositions of glass received in casework have been established by a number of crime laboratories (Koons et al. 1991). Although these glass databases are undeniably valuable, it should be noted that they may not be representative of the actual population of glass, and the distribution of glass properties may not be normal. Although these are not direct indicators of the rarity in any specific case, they can be used to show that the probability of a coincidental match is rare." While the FBI seems to accept the possible appropriateness of such a showing, they also note, "Because of the complexity of the calculations, Bayesian statistical analysis including compositional data is extremely difficult to apply."

The proposed ULTR states that "conclusions may include probabilities based on appropriate databases or documented frequencies," which contradicts the FBI's findings and the ULTR's own Supporting Documentation. It seems impossible that a strictly physical analysis could ever justify the use of probabilistic analysis, as there are too many potential sources of glass fragments to make a sound probabilistic analysis based only on physical characteristics. Probabilistic statements are some of the most convincing arguments to triers of fact, but they are also the most difficult propositions to support. If forensic experts are going to mention any kind of probabilities in their conclusions, the sources used and calculations performed must be detailed, and the limitations of those calculations and conclusions should be specifically articulated. Any database used should be accessible to the public or to defense experts. The ULTR should also specify that personal experience is not an acceptable source of probabilistic statements. Such subjective experience is not an appropriate or valid source for such statements.

## II. **Supporting Documentation**

The supporting documentation portion of the Glass Analysis ULTR lists many sources of information, but does not significantly detail the sources' findings or contents. They mention studies attempting to determine the rates of broken glass being found on a random person, but do not mention the limitation of such studies. For example, one citation regards Canadian High School students and another one looked at shoes of people in South-eastern Australia. Using any statistic or finding derived from these studies as support for evidence in a criminal case would be premature. Indeed, the variables involved in such an undertaking would seem to render the effort moot. A suspect living in a particular city, with a particular occupation, with a particular routine or daily life may have a much greater chance of exposure to glass particles or greater chance of transfer or retention. The Supporting Documentation should make clear the limitations of these studies, and the limitations of their use in forming an opinion.

Much of the source material is also exclusive to the realm of forensics. As the Supporting Documentation claims that the analytical methods used in glass analysis were developed outside of the realm of forensics, other sources of supporting documentation should be available. The methods described do seem to have originated in the realms of the material sciences, so their



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validity should be capable of independent citation and assessment without relying on the statements or endorsements of the FBI or SWGMAT exclusively.

Of greatest concern is the lack of a validated and objective standard for the assessment of whether or not two pieces of glass can be accurately sourced by attempting to physically fit them together. The FBI, in an April 2009 newsletter mentioned in these supporting documents, simply states, "Only physically matching two or more broken glass fragments allows for their association with each other to the exclusion of all other sources (Scientific Working Group for Materials Analysis [SWGMAT] 2005c)." The SWGMAT guideline states this process to determine a fit: "Align the edges of two pieces of glass that appear to match physically. Two pieces of glass will not slip past one another with gentle pressure when there is a physical match. Examine the broken edges using low-power light microscopy to observe corresponding Wallner lines (ridges) and/or hackle marks on the matching pieces of glass. Features, such as surface scratches or ream, may also match across a fracture." If this is to be the standard, it should be explicit.

Also concerning is the lack of documentation on the limitations of the testing methods presented in this section. Many of these techniques are still potentially subjective in nature, and thus open to cognitive and contextual biases, from sample selection and assessment, comparison of variations, dismissal of potentially exculpatory dissimilarity, and the like. There are more objective limitations as well, from potential variations in measurement capabilities, exhaustive or destructive testing procedures, and a lack of statistical information to support the use of terms such as "likely," "rare," and "indistinguishable." There are also limitations to the procedural aspects of the testing, such as the order in which the testing should be done, or other procedural safeguards to limit the effects of human error and bias. The ULTRs should provide more information about the limitations of these techniques and the interpretations that can be drawn from any results.

To that same end, the Supporting Documentation should include a more robust justification of the many and varied tests possible, as well as how to limit the chance of the kinds of errors which have caused so much concern in the forensics field. Including this information would justify the ULTR, by assessing the entirety of the practice in that particular field and setting standards by which labs can accurately come to the conclusions offered.

**PUBLIC COMMENT ON PROPOSED**
**UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**

**The Staff of the Committee for Public Counsel Services (CPCS), Boston, Massachusetts**
**Massachusetts Association of Criminal Defense Lawyers (MACDL), Boston, Massachusetts**

**July 8, 2016**

Comments on DOJ Proposed Uniform Language for Testimony and Reports for the Latent Prints Discipline

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In addition to the recommendations below, the Staff of the Committee for Public Counsel Services (CPCS) and the Massachusetts Association of Criminal Defense Lawyers (MACDL) endorse the suggested edits to the Latent Prints Discipline ULTR and Supporting Documentation that are proposed by the Innocence Project/Innocence Network.

## I. Uniform Language

The uniform language does not provide clear guidance on the use of uniform language in testimony and reports. The current proposal's permissive, somewhat passive language (e.g., "may state or imply" and "may not state or imply") reproduces the historical problems of providing forensic analysts far too little guidance about how to express their opinions to judges and juries. This creates disparate opinions and language from case to case and analyst to analyst, and leaves room for misunderstanding and error. For *approved statements*, we recommend changing "may state or imply" to "shall state or imply," and for *statements not approved*, changing "may not state or imply" to "shall not state or imply."

Categories used for comparison statements should be consistent with other impression and "pattern-matching" disciplines (see, for example, Fiber ULTR: Inclusion, Exclusion, Inconclusive). The ULTR does not provide sufficient guidance to examiners in stating an opinion about the "quality and quantity" of corresponding information during a friction ridge analysis. We recommend requiring the examiner to affirmatively describe the "quantity and quality" of information used during the comparison. Additionally, an examiner must state that determinations of both "quantity" and "quality" are subjective opinions.

While we support the Department's proposal that examiners cannot state an inclusion is "to the absolute exclusion of all others," the remainder of that section's proposed language is misleading and possibly contradictory. It encourages an examiner to state that as a sufficient number of reliable features were found in agreement between the questioned and known impressions, it is unlikely (or "less likely") that another print is the source. This language inherently implies that no other source is probable, and thus should not be included in the ULTR. It is also problematic that the ULTR suggests that such a statement could be made if "more reliable features are found in agreement" between the two impressions, but provides no definition or direction as to the term "more reliable features" or the number or quality of the


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features. This runs the risk of disparate and contradictory opinions from Department personnel, from laboratory to laboratory and analyst to analyst.

Regarding statements that are not approved, the examiner should not state or imply that his or her opinion and findings have been "verified" by a second examiner. Relatedly, the ULTR regarding "Zero Error Rate" should mirror the prohibited language in other disciplines' ULTRs, specifically that language included in the ULTR for footwear and tire impressions. Beyond prohibiting examiners from stating or implying a zero – or near zero – error rate for their methods or opinions, the ULTR must prohibit examiners from stating or implying **any** numerical value or percentage, including zero, to their methods or opinions.

## II. Supporting Documentation

The assertion that "[s]cientific testing of this premise [of uniqueness] has demonstrated that even identical twins, who share the same genetic information, have different fingerprints" is misleading and should not be permitted in testimony or reports. This assertion obscures the fact that identical twins usually share many similar characteristics, and the question of identification in practice is almost always how can uniqueness be determined, based upon a latent print of less than sterling quality. The assertion that even twins have different fingerprints is further misleading because the fingerprints of *any* sibling are known to share characteristics with *all other* siblings.

Moreover, the following statement should be stricken from the Supporting Documentation section, as there are no empirical studies supporting the assertion:

> "There are different methodologies and processes for conducting a latent print examination. The Department shares information regarding some appropriate processes below. The Department does not suggest that the processes outlined here are the only valid or appropriate processes."

The statement should also be stricken because the only process actually outlined below the disclaimer is ACE-V. As the Supporting Documentation does not – despite the disclaimer – provide information about other possible "processes," the section implies the appropriateness of ACE-V. Additionally, we make the following recommendations regarding the section discussing ACE-V:

- Limitations of ACE-V. The Supporting Documentation should include the findings in the 2009 National Academy of Sciences report that ACE-V "is not specific enough to qualify as a validated method for this type of analysis" and that "merely following the steps of ACE-V does not imply that one is proceeding in a scientific manner or producing reliable results." *See* National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* 142 (2009). The discussion of ACE-V also fails to recognize the challenges presented by the quality of latent prints (or footwear/tire tread impressions in that field), despite the fact that quality issues are routinely encountered in real life applications.



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- Subjectivity of Opinions. The Supporting Documentation should include an explicit acknowledgment, articulated by the NAS Report, that the ACE-V process involves a subjective judgment by the individual examiner based on a visual examination of questioned and known samples.

- Probabilistic statements. The Supporting Documentation and ULTRs for every forensic discipline that utilizes or may utilize the ACE-V process should prohibit examiners from making statements in any of the three error types recognized by the FBI in the context of the hair examination review. The Supporting Documentation and ULTRs should specify that the examiner shall not state that "the quality and quantity of corresponding information [is] such that the examiner would not to expect to see that same arrangement in another source" or that "studies have shown that as more reliable features are found in agreement, it becomes less likely to find the same arrangement in a print from another source." These statements clearly imply that the examiner's opinion of inclusion is highly probable, a claim that lacks any scientific basis.

- Lack of empirically-derived evidence of significance of features. The lack of empirically-derived evidence or standards based upon evidence for determining what "more reliable features" means, or for determining the significance of any given X number of features, renders this proposed language meaningless.

- Verification. The examiner should not be allowed to state that his/her analysis has been verified by another examiner. In addition to the inherent hearsay and confrontation problems, such an assertion introduces elements of confirmation and contextual bias that cannot be adequately countered by cross-examination.

- Required safeguards. The changes and safeguards implemented by the FBI in light of the Brandon Mayfield case should not just be described in the Supporting Documentation. Rather, the Supporting Documentation should explicitly require examiners to implement the revised procedures as necessary precautions in the wake of that case.

We support and commend the Department's inclusion of language in this section regarding the potential for examiner bias. However, we recommend that additional information be included to properly guide examiners beyond analyzing the questioned impression prior to analyzing the known print. The ULTR should also describe the role of cognitive bias and specify how to limit the impact of bias in an examiner's analysis. *See* NRC at 122 (*citing* M.J. Saks et al, *Context Effects in Forensic Science: A Review and Application of the Science of Science to Crime Laboratory Practice in the United States*, 43 Science and Justice 77-90 (2003)). Specifically, the Supporting Documentation should include specific steps that researchers have identified reduce cognitive bias, such as the need for blind verification that involves sequential unmasking of case-related information. *See e.g.*, National Institute of Standards and Technology, *Latent Print Examination and Human Factors: Improving the Practice Through a Systems Approach* 12 (2012) ("[B]lind verification shields the verifying

examiner from contextual bias that might otherwise affect the outcome in difficult cases. The Noblis-FBI experiment . . . indicated 'that blind verification of exclusions could greatly reduce false negative errors.'") (quoting B. Ulery et al, "Accuracy and Reliability of Forensic Latent Fingerprint Decisions," *Proceedings of the NAS* (2011)). The National Academy Science's 2009 report provides a thorough discussion of cognitive bias and its effects on forensic examiners and their conclusions. *See e.g.*, NRC at 122-124. Much of this language could be included in this section.



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# Comments
# 101 - 120



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**Comment ID:** 0101
**Discipline:** Fiber
**Comment Category:** Language
**Name/Organization:** Christine McCarthy, Centre for Forensic Sciences, Ontario, Canada
**Summary:** The Fiber comparisons Inclusion statement is supported by research and accurately reflects the consensus language. However, our laboratory does not use the wording "the *same* microscopic characteristics and optical properties" or "*consistent with* originating from". Instead of the former we use "*indistinguishable* microscopic characteristics" and for the latter we use instead "the unknown fibres either *originated* from the known item, or *originated from another source with indistinguishable fibres*". Certain terms, such as 'match' and 'consistent with' were used unevenly and were potentially misleading.



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## Submitter Information

**Name:** Jonathan Newman
**Address:**
25 Morton Shulman Avenue
Toronto, Ontario, Canada, M3M 0B1
**Email:** (b) (6)
**Phone:** (b) (6)

## General Comment

The Centre of Forensic Sciences, Ontario, Canada has provided comments in the attached document in the recommended format.

## Attachments

PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS - Fiber

## PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS –FIBRES

**The review sheet format**

**Proposed Uniform Language Discipline Reviewed: Forensic Textile Fibre Discipline**
**Reviewer Name: Christine McCarthy ([redacted])**
**Reviewer Organization: Centre of Forensic Sciences, Toronto, ON, Canada**

**Statements Approved for Use in Laboratory Reports and Expert Witness Testimony**

1. Fibre classification
   We agree with the statements and feel that they are clearly stated, supported by research, and accurately reflect consensus language. Our laboratory uses similar language. Unequivocal identifications of the generic class of fibres are reported as such (e.g cotton, nylon, polyester). Sub-classifications are not reported (e.g nylon 6, polyester PET).

2. Fibre comparisons
   Inclusion; we feel that the statement is supported by research and accurate reflects the consensus language. However, our laboratory does not use the wording "the ***same*** microscopic characteristics and optical properties" or "***consistent with*** originating from". Instead of the former we use "***indistinguishable*** microscopic characteristics" and for the latter we use instead "the unknown fibres either ***originated*** *from* the known item, *or originated from another source with indistinguishable fibres".*

   The reason for this stems from recommendations made of the Proceedings Involving Guy Paul Morin also known as the Kaufman Report (Guy Paul Morin [executive summary] (https://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/morin/morin_esumm.pdf) ; *which was the formal inquiry into the death of Christine Jessop, the conduct of the Centre of Forensic Sciences in relation to the maintenance, security and preservation of forensic evidence, and into the criminal proceedings involving the charge that Guy Paul Morin murdered Christine Jessop*).
   With specific reference to report wording; "**Finally, he noted that certain terms, such as 'match' and 'consistent with' were used unevenly and were potentially misleading. The use of these terms contributed to misunderstanding of the forensic findings**." (p.7 of 40 of the Kaufman report-executive summary)

   We also include notes for fibres of lower discriminating value: If the discriminating value of the fibres compared is very low (due to limited testing or ubiquitous fibres) this should be explained as a note in the Conclusions. For example: *COTTON: Due to the ubiquitous nature of these fibres, the presence of these fibres may be of low significance.*

   Exclusion; we feel that the statement is supported by research and accurate reflects the consensus language. Although, as mentioned above, we would exclude the use of the word 'consistent with' and instead write "the unknown fibres *did not originate from the* known item (or *from any of the items used for comparison*)*"*.



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**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony**

1. Individualization
   We agree with this statement, that the examiner may not state or imply that a fiber came from a particular source to the exclusion of all other sources.
2. Statistical weight
   We agree with this statement, the examiner may not state or imply a statistical weight or probability to a conclusion or provide a likelihood that the questioned fiber originated from a particular source.
3. Zero error rate
   We agree with this statement, the examiner may not state or imply that the method used in performing fiber examinations has a zero error rate or is infallible.

We feel that the statements are supported by scientific research, accurately reflect consensus language and are stated clearly.



Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11861

**Comment ID:** 0102
**Discipline:** Latent Prints
**Comment Category:** Language
**Name/Organization:** Jessica Gabel Cino, Georgia State University College of Law
**Summary:** The term identification invites a wide range of subjectivity into the analysis. The continued use of identification as a conclusion does nothing to advance the science of latent prints. The broad use of identification simply means inclusion. The subjectivity of ACE-V does not and should not allow for forensic reporting to even imply source attribution.

**Comment ID:** 0102
**Discipline:** Footprint and Tires
**Comment Category:** Language
**Name/Organization:** Jessica Gabel Cino, Georgia State University College of Law
**Summary:** The amount of categories for reporting appears to be establishing a scale of certainty, for which there is no scientific support. This scale of certainty leaves a wide latitude of subjectivity. Instead of proliferating positive statements with implications towards levels of certainty we should be creating statements that indicate the limitations of the examination.

**Comment ID:** 0102
**Discipline:** General Chemistry
**Comment Category:** Language
**Name/Organization:** Jessica Gabel Cino, Georgia State University College of Law
**Summary:** The lack of broad based qualitative statements in the Uniform Language document sets up a conflict of interest related to the limitations of either the analyst's expertise or the science itself. Instead of merely suggesting the analyst to report the limitations of his/her examination we should be requiring the analyst to report the limitations.

**Comment ID:** 0102
**Discipline:** Fibers
**Comment Category:** Language
**Name/Organization:** Jessica Gabel Cino, Georgia State University College of Law
**Summary:** There has to be a statement on the limitations of the examination for the analyst to merely imply a classification or comparison. Otherwise the implication could easily be interpreted as "to the exclusion of all others" by a jury. A statement such as, "the questioned fiber is similar to or consistent with the known sample but cannot be conclusively sourced to the known sample," could be a good alternative to the current proposed language.



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Comment on FR Doc # N/A

## Submitter Information

**Name:** Jessica Gabel Cino
**Email:** (b) (6)
**Phone:** (b) (6)

## General Comment

Comments to DOJ Uniform Language Proposal.
My name is Jessica Gabel Cino and I am a law professor at Georgia State University College of Law. I echo and support the comments made by Professor Epstein and the D.C. Public Defender Service/LA County Public Defender and submit my own (attached).

## Attachments

Cino Comments to DOJ Uniform Language Proposal

OFFICE OF THE ASSOCIATE DEAN
College of Law
PO Box 4037
Atlanta, GA 30302-4037
Phone: 404/413-9044
Fax: 404/413-9228
Web: law.gsu.edu

Georgia State University | COLLEGE OF LAW

July 8, 2016

To Whom It May Concern:

Thank you again for the opportunity to comment on the proposed uniform language for forensic science reports and testimony. Below are my comments related to specific forensic disciplines.

1. Latent Prints
   a. The term identification invites a wide range of subjectivity into the analysis. This is problematic because, as the Human Factors Report notes: "The thresholds for these decisions can vary among examiners and among forensic service providers. Some examiners state that they report identification if they find a particular number of relatively rare concurring features, for instance, eight or twelve. Others do not use any fixed numerical standard. Some examiners discount seemingly different details as long as there are enough similarities between the two prints. Other examiners practice the one-dissimilarity rule, excluding a print if a single dissimilarity not attributable to perceptible distortion exists." The continued use of identification as a conclusion does nothing to advance the science of latent prints.

   b. The broad use of identification simply means inclusion: it "increases the probability that a trace originated from a particular source within that set, and an exclusion decreases this probability to essentially zero." Yet allowing that term to be used more narrowly, it effectively "justif[ies] a source attribution" when the science does not support that. In fingerprints, the term identification is synonymous with the more outdated term "individualization." And individualization itself replaced the term "match." You can dress up "identification" however you want, but at bottom it still is equated with a match to the exclusion of all others and should be avoided.

   c. Further, the ACE-V method is a subjective test with a variety of implementations across the country. An examiner could make an identification in one state or jurisdiction and a different examiner could not find an identification from the same materials. The subjectivity of ACE-V does not and should not allow for forensic reporting to even imply source attribution.

2. Footprint and Tires
   a. The amount of categories for reporting appears to be establishing a scale of certainty, for which there is no scientific support. This scale of certainty leaves a wide latitude of subjectivity. To a lay person "could have made," "could not be determined" and "indications did not make" potentially have the same meaning. The minute details that differentiate the aforementioned categories do not change reality. The reality is that there is "a degree of non-association between the questioned impression and the known source, which is based on observed dissimilarities." Instead of proliferating positive statements with implications towards levels of certainty we should be creating statements that indicate the limitations of the examination.


Deliberative & Pre-Decisional

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3. General Chemistry
    a. General Chemistry appears to have taken what is scientifically defensible into consideration. Granted the majority of the testing is objective and allows for calculable error rates and true "identifications." Essentially, they can get to ground truth. However, the lack of broad based qualitative statements in the Uniform Language document sets up a conflict of interest related to the limitations of either the analyst's expertise or the science itself. Instead of merely **suggesting** the analyst to report the limitations of his/her examination we should be **requiring** the analyst to report the limitations.

    b. The language in the Uniform Language document: "The examiner may report and/or state the limitations of his/her examinations and opinions."
4. Fibers
    a. Allowing the analyst to "state/imply" for all categories of fiber classification and comparisons gives the analyst too much leeway. There has to be a statement on the limitations of the examination for the analyst to merely imply a classification or comparison. Otherwise the implication could easily be interpreted as "to the exclusion of all others" by a jury.
    b. The same is true using the phrase the "fiber is consistent with." A statement acknowledging the limitations of the examination needs to be present. We cannot assume jurors will take limitations into consideration. Further, the word "consistent" opens the door to abuse in closing arguments. A statement such as, "the questioned fiber is similar to or consistent with the known sample but cannot be conclusively sourced to the known sample," could be a good alternative to the current proposed language.
5. Conclusion
    a. Creating a uniformed language standard for reporting is a necessary step to establishing accountability and increasing reliability within forensic reporting. However, unifying ambiguity only amplifies inaccuracy. The juror perception of statements and language used in reporting needs to be a significant consideration in developing the uniformed language standard. Although we can never eliminate bias and faulty assumptions held by jurors and legal professionals that result from forensic reports, we can seek to create forensic reporting language that is honest and above reproach.

Sincerely,

Jessica Gabel Cino
Associate Professor of Law
Associate Dean for Academic Affairs


Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11865

**Comment ID:** 0103
**Discipline:** General Chemistry
**Comment Category:** Language; Statistical Validity
**Name/Organization:** Michael McVicar, Centre for Forensic Sciences, Ontario, Canada
**Summary:** For the "Statements Approved", uncertainties of measurement and confidence level are needed when the characteristic measured is critical to an element of the examination, such as firearm barrel length or weight of controlled substance recovered.

**Comment ID:** 0103
**Discipline:** General Chemistry
**Comment Category:** Language; Statistical Validity
**Name/Organization:** Michael McVicar, Centre for Forensic Sciences, Ontario, Canada
**Summary:** For the "Statements Not Approved", the pre-emptive language "shall not report" is needed here rather than the permissive "may not report".



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Gen Chem_pULTR_05252016

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## Submitter Information

**Name:** Jonathan Newman
**Address:**
25 Morton Shulman Ave
Toronto, Ontario, Canada, M3M 0B1
**Email:** (b) (6)
**Phone:** (b) (6)

## General Comment

The Centre of Forensic Sciences, Ontario, Canada has provided comments in the attached document in the recommended format.

## Attachments

PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS - General Chemistry



Deliberative & Pre-Decisional

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## PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS –GENERAL CHEMISTRY DISCIPLINE

**The review sheet format**

**Proposed Uniform Language Discipline Reviewed: General Chemistry Discipline**
**Reviewer Name: Michael McVicar**
**Reviewer Organization: Centre of Forensic Sciences, Toronto, ON, Canada**

**Statements Approved for Use in Laboratory Reports and Expert Witness Testimony**

Regarding statement 5: "The examiner may report and/or state the weight or volume of a substance which was examined. The weight or volume reported will include an associated estimated measurement of uncertainty and confidence level."

Weights or volumes are commonly included in a report as a descriptor of the sample when the measurement is not critical to the examination – e.g. "approximately 20mL of liquid collected from a fuel can" or "approximately 30g of soil and debris were collected from the clothing". Including an uncertainty of measurement in these instances does not add to the significance of the report. These estimates are included to assist in interpretation of the result, such as whether there was only a trace of material present vs kilograms.

An uncertainty of measurement and confidence level are needed when the characteristic measured is critical to an element of the examination, such as firearm barrel length or weight of controlled substance recovered.

**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony**

Regarding statement 2: "When no sampling plan was used and no reasonable assumption of homogeneity of an item was determined, the examiner may not report or state an opinion that the conclusions apply to the entirety of an item (or a percentage of the item)."

I would suggest that the pre-emptive language "shall not report" is needed here rather than the permissive "may not report".

**Supporting Documentation for the General Chemistry Discipline:**

Regarding the description of Forensic Chemistry: "Forensic chemistry is the application of chemistry for legal proceedings; it involves determining the chemical identity and characteristics of substances and performing chemical comparisons of substances."

I would suggest "…performing chemical and physical examinations and comparisons." Rationale: Forensic Chemistry involves more than chemical testing. Much of Forensic Chemistry involves microscopic examination, recovery and classification of trace evidence



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based on microscopic appearance, color, texture, phase distribution etc. Likewise, many of the instrumental techniques applied to trace evidence, such as FTIR, XRD, SEM/EDX, etc., rely on physical properties of the samples rather than chemical ones.



Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11869

**Comment ID:** 0104
**Discipline:** Latent Prints
**Comment Category:** Statistical Validity
**Name/Organization:** Anonymous
**Summary:** The proposed "inconclusive" language should be more clear about stating or implying a level of certainty that is numerically calculated



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**Comment On:** DOJ-OLP-2016-0012-0010
LatentPrint_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0104
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

Inconclusive
o The proposed language should be more clear about stating or implying a level of certainty that is numerically calculated. Is it appropriate with an inconclusive conclusion to state the number of correlating Level 2 Detail and or other features between two impressions? There has been several discussions in the our Section regarding the value of giving direct testimony that while there was insufficient data to render an decision of identification, there were a certain number of matching features between the two impressions. In my opinion this may imply an level of certainty that is interpreted by the jury and court as having more weight than it actually does.


Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11871

**Comment ID:** 0105
**Discipline:** SD Latent Prints
**Comment Category:** Language
**Name/Organization:** Anonymous
**Summary:** Document mentions implementing Blind Verifications, but does not go into detail when that quality assurance measure is used.



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LatentPrint_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0105
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

The supporting documentation mentions implementing Blind Verifications, but does not go into detail when that quality assurance measure is used.



Deliberative & Pre-Decisional

**Comment ID:** 0106
**Discipline:** Serology
**Comment Category:** Language
**Name/Organization:** Biological Data Interpretation and Reporting Committee (OSAC)
**Summary:** Scientists should be determining what language is being used in court or in reports based on scientific reasoning and not judges based on legal precedent (which may have no scientific foundation). Suggest deleting that phrase related to legal precedent.

**Comment ID:** 0106
**Discipline:** Serology
**Comment Category:** Language
**Name/Organization:** Biological Data Interpretation and Reporting Committee (OSAC)
**Summary:** Consider changing the title to "Examination of Serological Evidence". In the title of "Statements Approved for Serological Examination….": delete "or" of "and/or" and just have "and" since both testimony and reports should use the language. Add that negative result means "no result". Statement regarding false positives due to unknown cross-reactivity could be added. Additionally, add a sentence stating that these statements can only be used if the appropriate positive and negative controls have been performed on the reagents and the substrate being tested to confirm the test is functioning properly.



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**Comment On:** DOJ-OLP-2016-0012-0012
Serology_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0106
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous
**Address:** United States,
**Email:** (b) (6)

## General Comment

See attached file(s) from the Biological Data Interpretation and Reporting Committee (OSAC)

## Attachments

Comments on Documents from DOJ re Serology Uniform Language July 2016

Comments on “Proposed Uniform Language for Testimony and Reports…” – Serology from the Biological Data Interpretation and Reporting Committee (OSAC)

Overall the statements and presentation are fine. Just a few suggestions to consider:
1. Page 1, Box at top, third line: Judges should not be determining what language is being used in court or in reports. The scientists should be making that decision based on scientific reasoning and not judges based on legal precedent (which may have no scientific foundation) – it seems that this is part of the reason that this document is being created. Suggest deleting that phrase.

2. Consider changing the title to ….Examination of Serological Evidence. We do not examine serology but rather evidence for body fluids.

3. Page 1, Title of Section “Statements Approved for Serological Examination….”: delete “or” of “and/or” and just have “and” since both testimony and reports should use the language

4. Page 2, Negative Result section: suggest adding that negative result means “no result”; maybe put “Negative Result (No result)”

5. Perhaps a statement regarding false positives due to unknown cross-reactivity could be added

6. Perhaps add a sentence stating that these statements can only be used if the appropriate positive and negative controls have been performed on the reagents and the substrate being tested to confirm the test is functioning properly.


Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11876

**Comment ID:** 0107
**Discipline:** SD Serology
**Comment Category:** Language
**Name/Organization:** Biological Data Interpretation and Reporting Committee (OSAC)
**Summary:** Overall favorable, individual line edits.



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## Submitter Information

**Name:** Anonymous Anonymous
**Address:** United States,
**Email:** (b) (6)

## General Comment

See attached file(s) from The Biological Data Interpretation and Reporting Committee (OSAC)

## Attachments

Comments on Documents from DOJ re Serology Supporting Documentation July 2016



Deliberative & Pre-Decisional

Comments on "Supporting Documentation for Department of Justice Proposed Uniform Language…." Form the Biological Data Interpretation and Reporting Committee (OSAC)

1. Consider changing the title to…..Examination of Serological Evidence. We do not examine serology.

2. Page 2, top paragraph – perhaps add "typically" or "in a normal healthy human" as many of these numbers vary with different people with various health or disease states (e.g., anemia, bacterial infections, HIV or other viral infections, cancer).

3. Figure 1 doesn't really add anything. Could delete.

4. Page 2, B. Semen, first line: I'm not sure that reproductive fluid can be "male"; in this case male is meant to be a noun and not an adjective; perhaps: "the reproductive fluid produced by males"

5. Page 3, second paragraph, last sentence:
a) suggest replacing "separate" with "enrich for" since the process does not always result in a clean separation of the DNA from the two individual contributors
b) non-sperm cells can be present in the semen and from other orifices from the female other than the vaginal cavity (and orifices from males as well). Perhaps this sentence should be expanded to be more complete.

6. Page 4, 6$^{th}$ line, end of line: Replace "Several" with "These" – unless there are others than AP and p30 being used.

7. Page 5, top paragraph: FBI is mentioned whereas DOJ is mentioned everywhere else

8. Page 5, under "Serological Examination Process," second paragraph, second sentence: Visual examinations are not "serological" in nature, rather examinations conducted by serologists or biologists in the serology section. Suggest deleting that word or moving it to a more correct location. Also, a comma needs to be added in front of "which."

9. Page 5, under "Serological Examination Process," second paragraph, third sentence:
a) replace "determine" with "assess" or add "aid in determining" since a presumptive test does not "determine"
b) the commas and quotations marks were confusing. Suggest: "tests used for screening (called "presumptive" tests) and tests (called "confirmatory" tests) used to identify a body fluid (e.g., blood or semen).

10. Page 5, Under A. Presumptive tests used...., second line: May take the opportunity to explain that detecting a very small amount of body fluid means there is fairly high sensitivity of the assay. Page 5 under Presumptive tests – uses the language "an appropriate identifying test" – it would be clearer and more in line with the rest of the document to state confirmatory test. This paragraph also makes it sound like a confirmatory test is required. May want to make it clearer that is not the case.

11. Page 6, first sentence under The Kastle Meyer Test: substitute "for" for "that detect" since the word "detect" is used twice in the sentence. Perhaps "biochemical assays for the presence of the iron-containing heme group…).



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12. Page 6, bottom: Should the procedure spell out that this is how it is performed at the FBI rather than suggesting that a moistened cotton-tipped swab is the only means of testing a stain? Other laboratories do cuttings, use filter paper, rubbings, scrapings, etc., or state laboratories may use all of the above?

13. Page 7, end of first paragraph: maybe "i.e.," should be "e.g.,"

14. Page 7, top two paragraphs: Perhaps these two paragraphs could be combined for clarity

15. Page 7, last sentence of last paragraph before Hemochromogen Crystal Test: perhaps add that the false positive results are the reason it is a presumptive test

16. Page 8: perhaps mention that there are other tests for the confirmation of blood (e.g., using antibodies) . Additionally, the photograph of the Takayama crystals is unclear and not representative of what how they truly appear.

17. Page 9, middle paragraph, last sentence: Delete the second "used" in the sentence

18. Page 9 – under detecting semen. When describing a semen stain, it mentions that they can be heavy and crusted. Even though this is true it is misleading as most often they are not and are usually dilute. The next sentence mentions if low quantity semen is present, the stain may be hard to visualize in normal light. Plenty of high quantity stains are hard to visualize because they are diluted but there is still a large amount of sperm and high AP activity. Suggest that this whole section be re-written to address how stains usually appear.

17. Page 9, last sentence: is a hyphen needed after "pink" and "purple"?

18. Page 10, first line of first full paragraph: perhaps list some other body fluids with AP in parentheses with "e.g.,".

19. Page 11, top of page: Is there no literature from the company to cite regarding the quantitative information?

20. Page 12, first sentence: "Forensic examiners" probably does not need to be capitalized.

21. Page 12: The persistence of the semen and its components on an item is different from the detection of the activity of its components. Semen may still be present on an evidence item in the absence of AP activity unless some activity occurred to remove the semen from the item prior to testing. The wording in the paragraph is a bit confusing or misleading – clarification is needed to differentiate persistence of "semen" and persistence of the ability to detect its presence.

22. Page 13, Table 1 and text: Survival of sperm and the ability to detect sperm have two different meanings. Perhaps "survival times" and "survivability" (which also suggests viability) should be replaced with another term, such as "detection of." Additionally, the table on sperm cell survival times is very misleading. Yes sperm can survive up to these times in the various locations but the quantity and quality of sperm on day four is nowhere near the quality or quantity of sperm on day one. If one has numerous sperm with tails these are not from day 4 but this table could easily be interpreted that way. A clarification needs to be added that there is a significant decrease in the quality and quantity of sperm



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over time and that the results at the end of the time frame are at the limits of detection of the assay and do not mirror those of earlier time points (or something to that affect).

23. Page 13, first sentence: it is unclear what "their" is referring to. If seminal fluid, then it should be singular; if sperm cells, then the sentence is unclear. Suggest combining this paragraph with the paragraph above on page 12 since some information is repetitive.

24. Page 14, first paragraph, 7th line: Suggest adding "most" in front of "forensic laboratories no longer perform."

25. Page 15: Perhaps this paragraph needs to be updated and modified since ASCLD/LAB does not exist anymore. Also they assessment cycle is every 4 not 5 years.


Deliberative & Pre-Decisional

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**Comment ID:** 0108
**Discipline:** Overall
**Comment Category:** Underlying Science
**Name/Organization:** E.G. Morris, National Association of Criminal Defense Lawyers
**Summary:** The ULTRs are simply too broad and too permissive to prevent testimonial overstatements that convey scientific certainty to the jury in disciplines that are highly subjective. In order to prevent the type of testimonial overstatements identified by the MHCA Review, the guidance provided to examiners about testimony and lab reports must be detailed and specific.

**Comment ID:** 0108
**Discipline:** Overall
**Comment Category:** Underlying Science
**Name/Organization:** E.G. Morris, National Association of Criminal Defense Lawyers
**Summary:** DOJ Must Directly Solicit and Implement Feedback From the Scientific Community Outside of Legal and Forensic Practitioners. DOJ should seek input from the NIST OSACs as they also work to develop standards. Moreover, it is unclear how the ULTRs will interface with the OSAC guidelines, and the President's Council of Advisors on Science and Technology (PCAST) Report. DOJ must firmly establish the role of the ULTRs and be explicit that they will not replace guidelines set by scientists based on actual discipline validation.



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## Submitter Information

**Name:** E.G. Morris
**Address:**
1660 L Street
Floor 12
Washington, DC, 20036
**Email:** (b) (6)
**Phone:** (b) (6)
**Organization:** National Association of Criminal Defense Lawyers

## General Comment

See attached file(s)

## Attachments

NACDL Comment Docket No. DOJ-OLP-2016-0012

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**E. G. Morris**
**President**

July 8, 2016

**Comment by the National Association of Criminal Defense Lawyers on Department of Justice Proposed Uniform Language for Testimony and Reports**

**Docket No. DOJ-OLP-2016-0012**

To whom it may concern:

The National Association of Criminal Defense Lawyers (NACDL) commends the Department of Justice (DOJ) for developing uniform standards for testimony and lab reports generated by the Federal Bureau of Investigation (FBI), the Bureau of Alcohol Tobacco and Firearms and Explosives (ATF) and the Drug Enforcement Administration (DEA). NACDL further commends the DOJ for releasing these standards for public comment, particularly for comment from the scientific community. NACDL has worked collaboratively with DOJ, the FBI and the Innocence Project on the microscopic hair analysis review project since 2012, and, as a result, we have seen firsthand how pervasively hair examiners exaggerated their conclusions when testifying in hair comparison cases. Thus, this initiative by DOJ, along with its commitment to making both efforts "deliberative" and "transparent" is most welcome. In the spirit of that commitment to a deliberative and transparent process, NACDL offers these comments on the proposed "Uniform Language for Testimony and Reports" (ULTR).

NACDL is the preeminent organization advancing the mission of the criminal defense bar to ensure justice and due process for persons accused of crime or wrongdoing. A professional bar association founded in 1958, NACDL's approximately 9,000 direct members in 28 countries –and 90 state, provincial, and local affiliate organizations totaling up to 40,000 attorneys—include private criminal defense lawyers, public defenders, military defense counsel, law professors, and judges committed to preserving fairness and promoting a rational and humane criminal justice system. NACDL has a keen interest in ensuring the accuracy and reliability of all evidence that may be introduced to support a criminal prosecution.

NACDL has played a vital role in several significant historic reviews of flawed forensic science evidence. First, NACDL partnered with the Innocence Project and the FBI to review comparative bullet lead analysis (CBLA) cases, following the FBI's admission that its agents potentially gave flawed or misleading testimony in thousands of CBLA cases. In addition, NACDL currently works with the Department of Justice Office of Enforcement Operations to correct the serious injustice caused by the failure to notify thousands of defendants whose cases were affected by the findings of wrongdoing in the 1996 Office of the Inspector General Report and FBI Task Force investigation. Finally, as mentioned above, NACDL partnered with the FBI, DOJ, the Innocence Project and the law firm Winston & Strawn to review criminal cases in which the FBI conducted microscopic hair comparison testimony or lab examinations. While the Microscopic Hair Comparison Analysis Review (MHCA Review) is ongoing, the results thus far have conclusively documented the extraordinary frequency of exaggerated testimony. The FBI and Department of Justice agreed that FBI examiner testimony exceeded the limits of the science in over 90% of trials reviewed.

As a result of its participation in this project, NACDL has unique insight into the character and prevalence of testimonial overstatements made by FBI analysts. The results of the MHCA Review demonstrate the urgent need for clear, precise, and binding guidelines that govern the language used by forensic experts in both testimony and lab reports. Although not a panacea, it is NACDL's hope that if the ULTRs are developed with significant and meaningful peer review, they will finally set firm limits on the language that analysts use to convey their results to a jury in order to prevent the miscarriages of justice identified by the CBLA Review, the FBI Task Force Review, and the MHCA Review.

Given NACDL's experience reviewing testimony and lab reports in pattern-matching forensic disciplines, we offer specific comment only on the fiber, footwear and tire treads, and latent print examination ULTRs. However, much of our comment is applicable to all testimonial standards.

## I. The MHCA Review Established the Limits of Appropriate Hair of Comparison Testimony and Illustrates the Dangers of Overstated Conclusions in Similar Disciplines.

The MHCA Review identified three common scientific overstatements made by FBI hair examiners in testimony and in lab reports. Moreover, as part of the Review, the FBI and DOJ agreed upon what the science of microscopic hair comparison supports and established appropriate testimonial limits for the discipline. The FBI and the DOJ now recognize that statements that exceed those scientific limits are not supported and are erroneous. These erroneous statements were found in over 90% of the hundreds of trials reviewed thus far in which FBI examiners testified.

The errors fall into three categories:

- **Error Type 1:** The examiner stated or implied that the evidentiary hair could be associated with a specific individual to the exclusion of all others.
- **Error Type 2**: The examiner assigned to the positive association a statistical weight or probability or provided a likelihood that the questioned hair originated from a particular source, or an opinion as to the likelihood or rareness of the positive association that could



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lead the jury to believe that valid statistical weight can be assigned to a microscopic hair association.

- **Error Type 3:** The examiner cites the number of cases or hair analyses worked in the lab and the number of samples from different individuals that could not be distinguished from one another as a predictive value to bolster the conclusion that a hair belongs to a specific individual.

Pursuant to the scientific standards adopted by the FBI and DOJ for the MHCA Review, a well-trained hair examiner may only provide an opinion that an individual can be excluded as a possible source of a questioned hair, or included as a possible source at the class level. Testimony is only acceptable if it: "appropriately reflected the fact that hair comparison could not be used to make a positive identification, but that it could indicate, at the broad class level, that a contributor of a known sample could be included in a pool of people of unknown size, as a possible source of the hair evidence (without in any way giving probabilities, an opinion as to the likelihood or rareness of the positive association, or the size of the class) or that the contributor of a known sample could be excluded as a possible source of the hair evidence based on the known sample provided." Identification is not permitted, and an opinion regarding rareness of an association would only ever be potentially appropriate with hair samples that have distinct unusual characteristics, such are certain diseases. FBI Microscopic Hair Comparison Analysis Scientific Standards (11/9/2012).

Like hair examination, latent print examination, fiber examination and footwear and tire tread examination, and to some extent glass examination, rely on the subjective judgments of well-trained examiners. All subjective pattern-matching disciplines rely on two assumptions (1) that a well-trained examiner can associate a known item with an unknown item based on visual identification of similarities and differences and (2) that that identification has value because of the uniqueness of those characteristics. Similar to hair comparison, the probative value of those disciplines is limited because the pool of items that share the characteristics identified by the examiner is unknown. In conveying that association or exclusion to a jury, examiners in unvalidated, subjective fields are similarly at risk of making the same overstatements as the FBI Hair and Fiber Unit, because assigning any statistical probability or weight to the association is not is supported by the current scientific research.

## II. The Proposed Uniform Language for Testimony and Reports for Pattern-Matching Disciplines Will Not Prevent the Kind of Erroneous Testimony Now Disavowed by the FBI and DOJ that was offered for Decades in the Discipline of Microscopic Hair Comparison.

The proposed ULTRs for the Forensic Textile Fiber Discipline, Forensic Footwear and Tire Tread Discipline, and Latent Print Discipline only prohibit three statements: (1) Individualization, (2) Statistical Weight/Numerical Certainty, and (3) Zero Error Rate. Short of proclaiming identification to the exclusion of all others, assigning a numerical statistical weight to that association, or implying that the discipline has an error rate of zero, examiners may still generally state that they have made an identification between a known and questioned item.[1]

[1] Each discipline differs slightly in in the definition of acceptable testimony. The ULTR for Forensic Textile Fiber Discipline allows classification into natural and manufactured fibers, and does not allow for



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FBI hair examiners were always prohibited from testifying that a hair came from a certain individual to the exclusion of all others.[2] And yet, agents frequently made statements such as "my opinion is that those hairs came from [Victim]." FBI Guidance, Error 1. Similarly, although there has never been a statistical basis for hair comparison, analysts routinely used their own experience to add numerical certainty or assign a likelihood to a positive association. For example: "However, in my experience, in looking at hundreds and hundreds of hair samples, it's very rare for me to find two known head hair or pubic hair samples that I can't distinguish microscopically." FBI Guidance, Error 3. Indeed, analysts regularly used their own experience to effectively communicate an unvalidated error rate and bolster the conclusions they offered to the jury. For example: "The ten thousand known samples I have looked at over the last fifteen years, and I have been keeping track of them, during that time I have only had two occasions out of those ten thousand known samples, where I had hairs from two different people, that I was not able to distinguish from one another..." FBI Guidance, Error 3.

The draft ULTRs are simply too broad and too permissive to prevent testimonial overstatements that convey scientific certainty to the jury in disciplines that are highly subjective. In order to prevent the type of testimonial overstatements identified by the MHCA Review, the guidance provided to examiners about testimony and lab reports must be detailed and specific. Examiners must be provided with examples of acceptable and unacceptable language for testimony and reports, based on the limits of the particular science as currently known and accepted by the scientific community. Without specifically delineating unacceptable testimony, forensic experts could continue to provide the erroneous testimony that has plagued hundreds of FBI microscopic hair comparison cases. For example, several pattern and impression evidence ULTRs would still permit scientifically invalid probabilistic testimony regarding the "likelihood or rareness of the positive association" or use of experience to imply an error rate for the discipline that is not scientifically supported. Such statements would be equivalent to FBI MHCA Review Error Types 2 & 3.

Preventing and identifying scientifically unsupported forensic is critical to ensuring the fairness and integrity of the criminal justice system. This erroneous testimony has very real consequences. Hair comparison testimony now identified by the FBI as erroneous has resulted in the wrongful conviction of defendants later proven innocent by DNA testing. For example, Kirk Odom was convicted and spent 22 years in prison based in large part on flawed testimony by an FBI examiner. The examiner used his experience to provide unsupported probabilities, stating there were "only eight or ten times in the past ten years, while performing thousands of analyses" that he had not been able to distinguish between two hairs from different individuals (MHCA Error Type 3). Mr. Odom was exonerated when DNA testing proved that he was actually innocent, and that the hair the analyst "matched" to him was not his. Similarly, we now know

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"identification" only "inclusion" or "exclusion." The ULTR for Forensic Footwear and Tire Impression also allows for many more conclusions beyond Identification, Inconclusive, or Exclusion. These distinctions provide an even greater risk that this testimony will mislead a jury by giving a statistical weight to the association.

[2] FBI Agents frequently gave the disclaimer that "hair is not like a fingerprint" and "hair comparison is not a means of positive identification" then proceeded to give testimony that misled the jury about the evidence and exceeded the limits of science.



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that in several other cases in which a conclusive exoneration was established by DNA testing, various forms of erroneous testimony by the FBI were admitted. The draft ULTRs would not prevent analysts in other disciplines from giving the same type of flawed testimony. Establishing the correct standards is not just an intellectual exercise—it is about reducing the risk of wrongful conviction, and ensuring that there is fundamental fairness in how forensic science is used in the criminal justice system.

## III. The DOJ Must Directly Solicit and Implement Feedback From the Scientific Community Outside of Legal and Forensic Practitioners.

While NACDL commends the DOJ on their ongoing commitment to transparency, the release of the ULTRs on www.regulations.gov does not constitute a peer review of those standards. As it has in the MHCA Review, the federal government must engage scientists and statisticians must continue to set the boundaries of acceptable testimony based on the accepted limits of each individual discipline. Thus, NACDL strongly encourages DOJ to seek input on the ULTRs from statisticians, including at the statistician roundtable scheduled for July. NACDL further encourages DOJ to seek input the scientific community, including from the NIST OSACs as they also work to develop standards. Moreover, it is unclear how the ULTRs will interface with the OSAC guidelines, and the President's Council of Advisors on Science and Technology (PCAST) Report. DOJ must firmly establish the role of the ULTRs and be explicit that they will not replace guidelines set by scientists based on actual discipline validation.

In addition, NACDL asks DOJ to clarify the process by which these comments are adjudicated and how feedback from the comments will be incorporated into the development of the final ULTRs. Clarification is also requested as to the next steps in this process, including the method for releasing updated/revised versions of the ULTRs after this comments period.

NACDL thanks DOJ for its commitment to ensuring the accuracy of forensic testimony presented at criminal trials, and looks forward to continued participation in this important endeavor.

Sincerely,

E.G. Morris
President, NACDL



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**Comment ID:** 0109
**Discipline:** SD Toxicology
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** Not all identifications are made by Mass Spectrometry, therefore, it is not always part of the testing procedure.



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Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

Page 6, "C. Conclusions within the Forensic Toxicology Discipline" third bullet point under "Identification". Not all identifications are made by Mass Spectrometry, therefore, it is not always part of the testing procedure.



Deliberative & Pre-Decisional

**Comment ID:** 0110
**Discipline:** SD Toxicology
**Comment Category:** Underlying Science
**Name/Organization:** Raymond Kelly
**Summary:** Questions validity of a finding of the Society Of Forensic Toxicologists cited in a footnote.



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Comment on FR Doc # N/A

## Submitter Information

**Name:** Raymond Kelly
**Address:**
1804 Somersby Way
Henderson, NV, 89014
**Email:** (b) (6)
**Phone:** (b) (6)
**Fax:** 702-435-1911

## General Comment

I am writing to address one of the guidelines for forensic toxicology testimony and/or laboratory reports, specifically, one of the "Statements Not Approved For Toxicology Testimony and/or Laboratory Reports". The first statement is given as "1. An examiner may not report or state the dose of a drug or poison given based on analytical findings in post-mortem samples." I have a number of comments on this.

Under Supporting Documentation, this guideline is referenced (p.8) to a "Proposed SOFT [i.e., Society of Forensic Toxicologists] position statement (PS) on the misuse of volume of distribution calculations for drugs in postmortem cases", with a footnote to an issue of the SOFT newsletter, ToxTalk (vol. 29, no. 2, 2005). a) I have been a member of SOFT for many years and was so at the time of this proposed PS. Importantly, the PS itself is NOT an authoritative statement by the SOFT organization, since it was voted down at the annual meeting. b) That action in voting down the PS, may be regarded as more representative of the views of working forensic toxicologists at that time than the PS itself, authored by a small number of individuals without citing support for their position in the toxicology literature. c) Many forensic toxicologists, myself included, disagreed with the purported scientific justifications offered for this PS, as well as questioning the appropriateness of resolving scientific controversies by fiat when more suitable mechanisms exist. A fiat from scientists of the day would once have declared that the earth was flat. I attach two documents I authored at the time the original PS was proposed. c) Certain things are incontrovertible to me, based on first principles, that 1] there is a monotonic relationship between amount of drug or poison ingested by a living person and a resulting blood or plasma level, as modified by a multitude of pharmacological factors. To argue the converse (i.e., that there is no relationship) is absurd and would invalidate the entire science of pharmacokinetics; in fact elementary pharmacology textbooks routinely present such dose calculations. 2] There is a monotonic relationship between a person's


Deliberative & Pre-Decisional

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antemortem blood or plasma level of a drug or poison and their postmortem level, as modified, again, by a number of factors, the most prominent of which are postmortem redistribution and un-absorbed drug in the GI tract. 3] Accordingly, a dose estimate (which I prefer to call a body burden estimate) can be arrived at, provided one, instead of offering a single number, offers a range based on the uncertainties contributed by the types of factors I have mentioned. In my view, misuse of volume of distribution (VD) calculations occurs when an alleged expert calculates a single number, not allowing for the population variability of VD for the drug in the literature, the range of postmortem redistribution for the drug, what is known about the timing of the dose, genetic variability in drug metabolism, etc. Many or most of these issues obtain when pharmacological calculations are done in living persons, and yet those are still done routinely. When I have used this approach in my practice, I have characterized the results as extremely rough estimates.

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# Attachments

Memo063005

ltr062305



Deliberative & Pre-Decisional

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MEMORANDUM

TO: Halle Weingarten

FROM: Ray Kelly

SUBJECT: Technical Issues with SOFT Statement

DATE: June 30, 2005

Issue No. 1: This position statement is apparently being proposed based on a few extreme and isolated instances where the technique of making dose calculations using the volume of distribution parameter was misused in a court case. As usual, "exceptions make bad law".

Issue No. 2: The position statement is characterized by Dr. Graham Jones on the facing page of ToxTalk (vol. 29, no. 2, p. 8) as reflecting that SOFT "*does not endorse* the use of such calculations for drugs in postmortem cases.". However, this characterization fails to capture the one-sideness and intensity of the position statement itself, which says the technique "lacks a valid scientific foundation in most circumstances" and that it is "unreliable".

Issue No. 3: Several of the justifications for the position statement are questionable or wrong:

Reason #1: "$V_d$ is almost never known for a specific individual and can vary several-fold for many drugs…" etc. True enough, but this applies equally well to use of the technique in living persons and thus suggests that all such calculations of dose (or more correctly, body burden) are inappropriate under all circumstances. Such calculations have been included in pharmacology texts for many years.

Reason #2: "The plasma concentration of a drug is not at steady state at the moment of death, and therefore the use of $V_d$ is inherently invalid…" etc. The main argument here seems to be factually incorrect. Rather, the calculation seems to require distributional equilibrium between the blood and tissues. Furthermore, drug in the gut, which is unabsorbed, will of course not be included, causing the body burden estimate to be too low. However, this is just an example of a factor to be kept in mind so as to correctly interpret the result.

Reason #3: The plasma concentration of a drug at the time of death is rarely known with any degree of confidence, especially for those drugs that undergo postmortem redistribution…" etc." This point largely attacks the use of the technique using central blood results, but again, could apply not just to $V_d$ dose calculations but to any and all interpretations of postmortem toxicology results. It is widely accepted



Deliberative & Pre-Decisional

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among toxicologists that peripheral blood drug levels are to be preferred and generally may be regarded as less subject to postmortem redistribution than central blood. Once again, rather than being a specific argument against the calculation technique it suggests that interpretive postmortem forensic toxicology based upon blood results is a completely useless exercise. While this view is in fact held by a minority of forensic pathologists (S.B. Karch, et al.), it has not yet reached widespread acceptance among forensic toxicologists.

Reason #4: "The blood:plasma distribution of many drugs is unknown, and in any case may vary from one individual to another…" etc. The blood:plasma distribution is, in fact, known for many other drugs. This point also applies equally well to living persons, at least with respect to whole blood testing. In any case, the objections listed under this point are subject to experimental testing by interested persons, and such work would indeed illuminate these issues surrounding the use of pharmacokinetic calculations. However, they do not necessarily invalidate all such calculations.

Additional points are made later in the position statement about the fact that even if the body burden is calculated correctly, the time of dosing and the possibility of drug accumulation during chronic therapy needs to be kept in mind. Once again, these are interpretive issues that arise with any attempt to use pharmacokinetic information and are not unique to postmortem $V_d$ calculations. For example, any inference that the total amount of drug in the body was consumed in a single dose would lie far outside the calculation method itself. As above, these issues highlight the necessity to make correct use of data regardless of how derived.

In summary, the proposed SOFT position statement appears to consist of assertions made with a lack of literature support and rather seem to constitute opinions on the part of (some) SOFT members. There is an implication that all toxicologists who "misuse" the $V_d$ dose calculation would fall into all of the pitfalls listed here, including that they use the method to determine an exact quantity of drug rather than a range. On those occasions when I have used it, I have used the results, in the context of the case, to suggest whether there is "a lot or a little" drug there. I think this position statement needs a lot of reworking to avoid "throwing out the baby with the bathwater".


Deliberative & Pre-Decisional

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June 23, 2005

Graham Jones, Ph.D., DABFT
President, Society of Forensic
Toxicologists

Re: SOFT Position Statement on
Use of Volume of Distribution
Calculations in Post-Mortem Cases

Dear Graham:

I have been a member of SOFT as well as other professional organizations in forensic toxicology for a number of years. I was a member when the organization released position papers on hair testing for drugs in the past. For much of the 1990's, I was involved in the commercial development of hair testing, and it is from that background that I write. I opposed those earlier position statements and feel the same way about the proposed position statement on volume of distribution calculations included in the latest *ToxTalk* newsletter. I am concerned about the issuance of such position statements on technical topics by scientific organizations for a number of reasons.

1) There is an implication that such position statements speak for all members of a profession or of a professional organization. In actual fact, however, such statements are often drafted by one or a small number of persons who, whatever their qualifications and motivations, should not presume to speak on behalf of all, or even a majority of their professional colleagues and associations.

2) Position statements, being by their nature brief and concise, must summarize a great deal of scientific opinion and data on a topic in a small space and without supporting documentation. Furthermore, opposing views are not represented, typically having the effect, if not the intention, of suppressing such views.

3) Conclusions or excerpts from such position statements tend to be used out of context by non-experts in the media and legal fields to overwhelm opposing views without the necessity to debate the science.


Deliberative & Pre-Decisional

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4) At best, position statements represent a snapshot of scientific opinion at a particular point in time. With the passage of time, they may be seen to be incomplete or even misleading. Furthermore, they tend to stratify opinion within a discipline, suppress innovation, and can have a chilling effect on the development of a particular scientific discipline.

5) Such vehicles represent an inappropriate mechanism for resolving scientific disputes. More suitable mechanisms which have stood the test of time include publications in the peer-reviewed literature and presentations at scientific conferences. Under extreme circumstances, disciplinary actions by the ethics committees of professional organizations may be initiated. In the legal realm, various kinds of evidentiary hearings (Kelly-Frye, Daubert, etc.) are available to discourage the introduction of "junk science" into the court system. Last but not least in the legal arena, there is ample opportunity to cross-examine scientific witnesses as well as to present one's own opposing expert.

If it is considered essential to go ahead with this position statement, perhaps it could be edited to be more consistent with the way you have characterized it on p. 8 of *ToxTalk* ("…the statement would simply indicate that SOFT as an organization *does not endorse* the use of such calculations…."), that is, less pontifical and more in the way of providing guidance. I hope the membership of SOFT will consider my comments on this matter as they decide whether to approve this position paper.

Sincerely,

Raymond C. Kelly, Ph.D., DABFT
Forensic Toxicologist



Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11897

**Comment ID:** 0111
**Discipline:** Toxicology
**Comment Category:** Underlying Science
**Name/Organization:** Anonymous
**Summary:** Under "Statements Approved" #3 and #6 - scientific references should not be called authoritative. As scientific knowledge is continually evolving, the description is not appropriate. Under "Statements Not Approved" #2 should be better worded to clarify its difference from #4 of the approved actions.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0014
Toxicology_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0111
Comment on FR Doc # N/A

## Submitter Information

**Name:** Anonymous Anonymous

## General Comment

Under "Statements Approved for Toxicology Testimony and/or Laboratory Reports"

#3 and #6. ". . . or other authoritative sources" - scientific references should not be called authoritative. As scientific knowledge is continually evolving, the description is not appropriate.

Under "Statements Not Approved for Toxicology Testimony and/or Laboratory Reports"

#2 should be better worded to clarify its difference from #4 of the approved actions.



Deliberative & Pre-Decisional

**Comment ID:** 0112
**Discipline:** Fiber
**Comment Category:** Language
**Name/Organization:** Simone Gittelson, NIST
**Summary:** Scientific research does not support a guideline forbidding a forensic scientist to state or imply a statistical weight. Contradictory statements forbidding the use of a statistical weight should be removed from this document. See recommendations of the NAS report.



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20220314-11900

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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0002
Fiber_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0112
Comment on FR Doc # N/A

## Submitter Information

**Name:** Simone Gittelson
**Address:**
100 Bureau Drive
National Institute of Standards and Technology
Gaithersburg, MD, 20899-8980
**Email:** (b) (6)

## General Comment

See attached file.

## Attachments

Review Textile Fiber



e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11901

**PROPOSED UNIFORM LANGUAGE DISCIPLINE REVIEWED: THE FORENSIC TEXTILE FIBER DISCIPLINE**

**Reviewer Name:** Simone Gittelson

**Reviewer Organization:** National Institute of Standards and Technology

***Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony***
*Provide a summary of your assessment of the statements not approved for use, including the most important highlights from the individual criteria comments.*
*• The statements not approved for use are supported by scientific research.*

I thank the Department of Justice for putting together these guidelines and giving the community the opportunity to comment. My comment is with regard to the second point under "Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony":

"Statistical Weight

The examiner may not state or imply a statistical weight or probability to a conclusion or provide a likelihood that the questioned fiber originated from a particular source."

I'd like to draw the authors' attention to the NAS [1] report (pp. 185-186) "*Publications such as Evett et al. [2], Aitken and Taroni [3], and Evett [4] provide the essential building blocks for the proper assessment and communication of forensic findings*." The above cited statement on the statistical weight seems contradictory to the recommendations of the NAS report, which imply that the proper assessment and communication of the results obtained in forensic science inevitably involves a statistical weight. Fundamental scientific publications supporting and providing explanations for such a statistical weight for results of forensic textile fiber comparisons include Buckleton and Evett [5], Champod and Taroni [6] and Champod and Taroni [7]. Hence, scientific research does not support a guideline forbidding a forensic scientist to state or imply a statistical weight. For this reason, I suggest removing this contradictory statement forbidding the use of a statistical weight from this document.

[1] Committee on Identifying the Needs of the Forensic Sciences Community NRC. Strengthening Forensic Science in the United States: A Path Forward. Washington, D.C.: National Academy Press; 2009.
[2] Evett IW, Jackson G, Lambert JA, McCrossan S. The Impact of the Principles of Evidence Interpretation on the Structure and Content of Statements. Science and Justice. 2000;40:233-9.
[3] Aitken CGG, Taroni F. Statistics and the Evaluation of Evidence for Forensic Scientists. 2nd ed: John Wiley & Sons, Ltd.; 2004.
[4] Evett IW. The Theory of Interpreting Scientific Transfer Evidence. Forensic Science Progress. 1990;4:141-79.
[5] Buckleton JS, Evett IW. Aspects of the Bayesian Interpretation of Fibre Evidence. CRSE Report 684, Home Office Forensic Science Service. 1989;1-17.
[6] Champod C, Taroni F. Interpretation of Fibres Evidence---The Bayesian Approach. In: Forensic Examination of Fibres, Grieve M and Robertson J, Eds. London: Taylor & Francis; 1999: pp. 379-398.
[7] Champod C, Taroni F. Bayesian Framework for the Evaluation of Fibre Transfer Evidence. Science and Justice. 1997;37(2):75-83.



e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11902

**Comment ID:** 0113
**Discipline:** Serology
**Comment Category:** Nature of ULTRs
**Name/Organization:** Madeline deLone, Innocence Project and Innocence Network
**Summary:**
-Remove phrase “may state or imply”.
-Reports should state all tests that were conducted (presumptive and confirmatory)
-Examiners should state the results for all tests performed (positive, negative, inconclusive)
-Examiners should state the basis for conclusions (e.g., basis for concluding “identification”, “inconclusive”, and “negative”).
-Add sources of error and uncertainty.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0113
Comment on FR Doc # N/A

## Submitter Information

**Name:** Madeline deLone
**Organization:** Innocence Project and Innocence Network

## General Comment

See attached file(s)

## Attachments

Serology_pULTR Comments_IP-IN_2016-07-08

**DEPARTMENT OF JUSTICE**
**PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**
**FOR THE FORENSIC EXAMINATION OF SEROLOGY**

**Purpose and Scope**

If adopted, this document will apply to Department of Justice personnel who perform forensic examinations and/or provide expert witness testimony regarding the forensic examination of serological evidence. This document does not imply that statements made or language used by Department personnel that differed from these proposed statements were incorrect, indefensible, or erroneous.

This document provides the acceptable range of opinions expressed in both laboratory reports and during expert witness testimony while acknowledging that this document cannot address every variable in every examination.

**Statements Approved for Serological Examination Testimony and/or Laboratory Reports**

**Type of Identification Testing**

- Reports should state all tests that were conducted (presumptive and confirmatory)
- Examiners should state the results for all tests performed (positive, negative, inconclusive)
- Examiners should state the basis for conclusions
  - Basis for concluding "identification"
  - Basis for concluding "inconclusive"
  - Basis for concluding "negative"
- Sources of error and uncertainty

~~3. An examiner may state or imply should state that no determination can be made regarding the presence or absence of blood or semen when an inconclusive result is obtained from the appropriate testing procedure(s).~~

**Comment [IP1]:** This section has a confusing arrangement of categories and statements It would be clearer to format the results as presented here

Please refer to our comments on the other ULTRs for details of what should be included in these statements

**Comment [IP2]:** See general comments – the phrase "may state or imply" is vague and can be interpreted different ways The examiner should state the properties and the conclusion that can be drawn from those properties This comment applies to the other yellow highlighted text throughout the proposed statements

**Deleted:** Identification of Blood or Semen¶
¶
~~1. The examiner may state or imply that blood or semen was identified on an item of evidence when a positive result is obtained from the appropriate confirmatory testing procedure(s).~~¶
¶
Presumptive Identification of Blood or Semen¶
¶
~~2. The examiner may state or imply that blood or semen may be present on an item of evidence when a positive result is obtained from the appropriate presumptive testing procedure(s).~~¶
¶
Inconclusive Result¶
¶

~~4. An examiner may state or imply should state that no blood or semen was detected on~~

**Statements Not Approved for Serological Examination Testimony and/or Laboratory Reports**

**Statistical Weight**

1. The examiner should not state or imply a statistical weight or probability to a conclusion to support the identification of blood or semen.

**Zero Error Rate**

2. The examiner ay should not state or imply that the method used in performing serological examinations or the examiner who conducted the analyses have zero error rate or is infallible.

**Deleted:** Negative Result¶
¶

**Deleted:** ~~an item of evidence when a negative result is obtained from the appropriate testing procedure(s).~~¶
¶
~~Limitations~~¶
¶
~~Confirmatory Tests~~¶
¶
~~5. An examiner may state or imply that confirmatory testing procedures may yield false negative results (i.e., no test signal when blood or semen is present) due to the sensitivity of such tests.~~¶
¶
~~Presumptive Tests~~¶
¶
~~6. An examiner may state or imply that presumptive testing procedures may yield~~¶
~~false positive results (i.e., test signal in the presence of materials other than blood or semen) due to the lower specificity of such tests.~~¶
¶
~~Negative Results~~¶
¶
~~7. An examiner may state or imply that the recovery of an insufficient quantity of blood or semen for detection and/or the recovery of biological material of insufficient quality can limit the ability to detect blood or semen using both presumptive and confirmatory testing procedures.~~

**Comment [IP3]:** This term matches the term used in the other ULTRs

**Deleted:** Numerical Certainty¶

**Deleted:** An

**Deleted:** may

**Deleted:** that a level of numerical certainty is calculated

**Deleted:** An

**Deleted:** m

**Deleted:** that they are

**Comment [IP4]:** This statement is not supported

**Deleted:** While the laboratory has a quality system in place to minimize and/or identify potential procedural errors, the analytical processes and procedures used to support serology testing do not have a calculable error rate due to the unpredictability of human error

**Comment ID:** 0114
**Discipline:** Overall
**Comment Category:** Language
**Name/Organization:** William Fitzpatrick, National District Attorneys Association
**Summary:** NDAA applauds the clear distinction between statements approved for the use in testimony and laboratory report language, as well as those not approved. This distinction will ensure the correct language is used at trial and both the prosecution and defense will have access to these documents should there be any need for cross-examination.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0001
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Document:** DOJ-OLP-2016-0012-0114
Comment on FR Doc # N/A

## Submitter Information

**Name:** Nelson Bunn

## General Comment

Please find attached a letter from the National District Attorneys Association (NDAA) regarding the proposed uniform language for testimony and reports. Thank you.

## Attachments

NDAA Statement on Uniform Language for Testimony and Reporting



Deliberative & Pre-Decisional

**National District Attorneys Association**
99 Canal Center Plaza, Suite 330, Alexandria, Virginia 22314
703.549.9222 / 703.836.3195 Fax
www.ndaa.org

July 8, 2016

United States Department of Justice
Office of Legal Policy
950 Pennsylvania Avenue, NW
Washington, DC 20530

Attn: Jonathan J. Wroblewski, Principal Deputy Assistant Attorney General

Subject: Docket No. OLP 157, Proposed Uniformed Language

Dear Mr. Wroblewski,

On behalf of the National District Attorneys Association (NDAA), the largest prosecutor organization representing 2500 elected and appointed District Attorneys across the United States, as well as 40,000 assistant district attorneys, I write in support of the Proposed Uniform Language documents distributed for public comment on June 10, 2016. Specifically, these documents include the following disciplines: fiber, footwear and tire treads, general chemistry, glass, latent prints, serology and toxicology.

NDAA applauds the Department's continuing commitment to forensic science by distributing these documents to all federal laboratories as uniform language to ensure testimony and reporting is consistent with applicable scientific standards across the Department.

In the proposed documents, there are two primary sections: statements approved for the use in testimony and laboratory report language, as well as those not approved. By clearly making this distinction, it will ensure the correct language is used at trial and both the prosecution and defense will have access to these documents should there be any need for cross-examination.

Once again, NDAA thanks the Department for its hard work and constant efforts for the advancement of forensic science. Should you have questions, please do not hesitate to contact NDAA Executive Director, Kay Chopard Cohen, at (b) (6) [redacted].

Sincerely,

William Fitzpatrick
President
National District Attorneys Association

**Comment ID:** 0115
**Discipline:** Gen. Chemistry
**Comment Category:** Underlying Science, Language
**Name/Organization:** Madeline deLone, Innocence Project and Innocence Network
**Summary:**
-The phrase “may state or imply” is vague.
-The examiner should state the tests that were done, the results, and his/her opinion regarding the conclusion.
-The ULTRs for General Chemistry needs an appendix or glossary which defines terminology.
-Use consistent terminologies throughout the documents.



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**Comment On:** DOJ-OLP-2016-0012-0006
Gen Chem_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0115
Comment on FR Doc # N/A

## Submitter Information

**Name:** Madeline deLone
**Organization:** Innocence Project and Innocence Network

## General Comment

The public comments submitted by the Innocence Project and Innocence Network (see attached) regarding the General Chemistry pULTR document are presented in track changes to the original DOJ document. These public comments are provided by the Innocence Project and the Innocence Network in the context of this process. No comment in isolation necessarily represents an official position of the Innocence Project, Innocence Network, or any member organization.

## Attachments

General Chemistry_pULTR Comments_IP-IN_2016-07-08

**DEPARTMENT OF JUSTICE**
**PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE GENERAL CHEMISTRY DISCIPLINE**

**Comment [IP1]:** The report needs an appendix or glossary which defines terminology.

**Purpose and Scope**

If adopted, this document will apply to Department of Justice personnel who perform forensic examinations and/or provide expert witness testimony regarding the forensic examination of general chemistry evidence. This document does not imply that statements made or language used by Department personnel that differed from these proposed statements were incorrect, indefensible, or erroneous.

This document provides the acceptable range of opinions expressed in both laboratory reports and during expert witness testimony while acknowledging that this document cannot address every variable in every examination.

**Statements Approved for Use in Laboratory Reports and Expert Witness Testimony Regarding Forensic Examination of General Chemistry Evidence**

**Identification**

1a. The examiner ~~may state or imply~~ should state the examinations that were conducted and the results of these examinations pertaining to . ~~report results of examinations and/or state opinions/conclusions about~~ the presence or absence of a targeted chemical (e.g., drugs, drug residues, bank dye chemicals, lubricants, pepper sprays)~~.~~

1b. When testifying about drug residues, need to testify about likelihood o-f ~~postitive~~positive results based on commonly occurring levels of trace residue of that drug and the sensitivity of the test.

**Comment [IP2]:** See general comments – the phrase "may state or imply" is vague and can be interpreted different ways. The examiner should state the tests that were done, the results, and his or her opinion regarding the conclusion that can be drawn from those properties. This comment applies to the other yellow highlighted text throughout the proposed statements.

2. The examiner ~~may report~~should state ~~and/or state an opinion as to~~ the ~~identification or~~ chemical classification ~~(if an identification was not achieved)~~ of a substance, if such an identification has been achieved. The examiner ~~may~~ should also ~~report and/or~~ state potential uses of the substance or class of substances.

3. The examiner ~~may report~~ should state ~~and/or state an opinion~~ that the conclusions apply to the entirety of an item (or a percentage of the item) when there is a reasonable assumption of homogeneity of the item and an appropriate sampling plan was used. These assumptions and the sampling plan must be documented in the report.

~~4. The examiner may report results of examinations and/or state opinions/conclusions regarding a chemical comparison that was performed between items, provided that the opinions/conclusions are supported by the appropriate chemical analyses.~~

**Exclusion (Not Detected)**

4. The examiner ~~may state or imply~~ should state that a particular substance is not identified on or in a questioned substance. This statement is used when the results





Deliberative & Pre-Decisional

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of the analytical examinations are negative for the substance or are below an administratively set detection limit. The examiner should describe the quantity and quality of information that was used to in this comparison the limitations of his/her examinations and analysis and the sources of error or uncertainty; available information on error rates and if error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.

**Comment [IP3]:** This is the wording from the Supporting Documentation. Toxicology uses "the method's detection limit." Please make these two documents consistent.

**Inconclusive**

5. The examiner should state that the particular substance could not be identified. This conclusion is reached when there are significant limiting factors within the evidence which prevents the examiner from conducting the analysis.

**Comment [IP4]:** Examples of limiting factors should be discussed in the Supporting Documentation.

**Comparison of Samples**

6. In cases involving a comparison of samples, the examiner should state the examinations that were conducted and results of examinations regarding a chemical comparison that was performed between items.

**(a) Cannot Be Differentiated**

The examiner should state that the samples exhibit the same characteristics and properties and are consistent with originating from the same source. This statement is used when results do not show any relevant differences in chemical composition between or among the samples.

**Comment [IP5]:** How is this term defined?

**(b) Can Be Differentiated or Can Be Excluded**

The examiner should state that the samples are dissimilar and accordingly, is not consistent with originating from the same source. This statement is used when results show any relevant differences in chemical composition between or among the samples.

**Comment [IP6]:** How is this term defined?

**Quantification**

7~~5~~. The examiner ~~may report~~ should state ~~and/or state~~ the weight or volume of a substance which was examined. The weight or volume reported will include an associated estimate of the variability of the ~~d~~measurement (e.g., standard error or confidence interval).~~uncertainty and confidence level.~~ In instances where both the weight and volume are reported for a substance, an associated estimated measurement uncertainty and confidence level is only necessary for one of the reported measurements (unless the weight and volume are being used in combination to calculate and report the density of the substance).

8. The examiner should state a qualitative assessment of the amount of a chemical when a validated quantitative method was not used, if the method(s) used is reliable for such estimation and the examiner states that the estimate is not the result of a validated quantitative measurement. The examiner should also state the basis for the conclusion that the method is reliable as a qualitative measure. A validated quantitative method must be used if the quantity of the substance is important as a matter of law.

9. The examiner should give an indication of the amount of sample used and/or consumed in the various steps of the testing process. The examiner should document the number of replicate tests conducted in the report.

**Purity**

6109. The examiner ~~may report~~ should state ~~and/or state~~ the purity of a chemical when a validated quantitative method was used; information on the methods used for this examination should also be included. The purity will include an associated estimated measurement uncertainty and confidence level.

~~7. The examiner may report and/or state an opinion about an estimated concentration~~qualitative assessment of the amount of a chemical ~~when a validated quantitative method was not used, as long as the method(s) used is MUST be reliable for such estimation and it is clearly stated that the estimate is not the result of a validated quantitative measurement. A validated quantitative method must be used if the quantity of the substance is important as a matter of law.~~

**Comment [IP7]:** The use of the word "concentration" is unclear here as concentration require some quantitative measurement.

**All types of statements**

1108. The examiner ~~may report~~ should state ~~and/or state~~ the limitations of his/her examinations and analysis~~opinions~~, including the specificity, sensitivity, and error rate of a given test. If error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this analysis is unknown. If an analytical scheme was used, the cumulative error rates of its component tests should be reported.

~~9. The examiner may report and/or state the general effects and/or properties of a chemical.~~

**Comment [IP8]:** This information is beyond the scope of the analysis of the drug and can contribute to prejudicial testimony.

**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony Regarding Forensic Examination of General Chemistry Evidence**

1. The examiner should not state or imply ~~may not report or state~~ an opinion ~~that definitively concludes~~ regarding how a chemical originated on/within an item or how long that chemical has been there.

2. When no sampling plan was used and no reasonable assumption of homogeneity of an item was determined, the examiner ~~may~~ should not state or imply ~~report or state~~ an opinion that the conclusions apply to the entirety of an item (or a percentage of the item).

3. In cases involving comparisons of items, the examiner generally may not report and/or state an opinion about the exact source of a chemical(s) (e.g., a comparison between a known pen and writing on a document). However, there may be instances when this is acceptable (e.g., chemical 'tags' were incorporated in the sample(s), entire population of comparison items was tested) and that rationale should be documented.



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4. An examiner may not give an estimated concentration of a chemical when a validated quantitative method was not used.

**Zero Error Rate**

5. The examiner ~~may not state~~ should not state or imply that the method used to conduct the examinations or the examiner who conducted the analyses has a zero error rate or is infallible.



Deliberative & Pre-Decisional

e8c99271-a235-4c1b-b11f-92a714e0792a 20220314-11915

**Comment ID:** 0116
**Discipline:** SD Gen. Chemistry
**Comment Category:** Language
**Name/Organization:** Madeline deLone, The Innocence Project and Innocence Network
**Summary:**
-Report needs an appendix or glossary which defines terminology.
-Clarify how much sample is consumed by various screening techniques and confirmation techniques.
-The conclusion category “Consistent With” does not seem distinguishable from an identification. Within this category, is “the bulk” really an acceptable term of measurement?
-Replace “may report” with “should report.”
-Important to note whether identification is at a class level or can specifically identify a compound.
-If analytical data only provides a class-level identification, testimony can only state that it is consistent at the class level and cannot point to consistency with a specific substance.
-In the “Cannot be Differentiated” category, the term “relevant differences” should be defined.
-Language of the “Inconclusive” section needs to be made consistent with the Gen. Chemistry ULTR.
-Replace “Policy Considerations” with “Considerations for Analysis and Interpretation”.



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20220314-11916

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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0007
Gen Chem_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0116
Comment on FR Doc # N/A

## Submitter Information

**Name:** Madeline deLone
**Organization:** Innocence Project and Innocence Network

## General Comment

The public comments submitted by the Innocence Project and Innocence Network (see attached) regarding the General Chemistry Supporting Documentation are presented in track changes to the original DOJ document. These public comments are provided by the Innocence Project and the Innocence Network in the context of this process. No comment in isolation necessarily represents an official position of the Innocence Project, Innocence Network, or any member organization.

## Attachments

General Chemistry_Supporting Documentation Comments_IP-IN_2016-07-08

# SUPPORTING DOCUMENTATION FOR DEPARTMENT OF JUSTICE PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE GENERAL CHEMISTRY DISCIPLINE

**Comment [IP1]:** The report needs an appendix or glossary which defines terminology.

## Background

Chemistry is the study of matter and its changes. Forensic chemistry is the application of chemistry for legal proceedings; it involves determining the chemical identity and characteristics of substances and performing chemical comparisons of substances.

General chemistry forensic analysis provides analyses of unknown substances to determine chemical identity, to determine chemical characteristics and to perform chemical comparisons. Substances analyzed include chemicals commonly associated with bank dye packs, controlled substances, pharmaceuticals, pepper sprays, inks, lubricants, and general unknowns.

## Principles of General Chemistry Examinations

General chemical forensic analysis permits a broad array of analyses based upon well-established chemical and instrumental techniques that are universally accepted in the scientific community. These techniques are not limited to forensic science and are routinely used in a variety of industries as well as academia. While instrumentation has advanced to become more sensitive with shorter analysis times, the same basic methods and theories have been employed for decades. These chemical and instrumental techniques provide reliable data that are dependent upon the chemical properties of the substance that was analyzed. As such, an examiner is typically able to interpret the data to deduce the chemical identity of the substance. On occasion, the data does not support a chemical identification; however, the data may allow the examiner to group the substance within a class of chemicals or products.

## General Chemistry Processes

There are different methodologies and processes for conducting a general chemistry examination. The Department shares information regarding some appropriate processes



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below. The Department does not suggest that the processes outlined here are the only valid or appropriate processes.

Common general chemistry examinations include:

- Drug analyses (including weight, volume, and purity determination): analyses of powders, liquids, tablets, and other items to detect the presence, weight, volume, and/or purity of controlled and non-controlled substances.

- Drug residue analyses: analyses of items to detect the presence of trace amounts of controlled substances.

- Bank dye analyses: analyses of stained items (*e.g.*, clothing, currency) to detect the presence of chemicals found in bank security devices.

- Lubricant analyses: analyses of items to detect the presence of lubricants (often in the context of cases involving sexual assaults, drug trafficking, or vehicular homicide).

- General unknown analyses: analyses of substances which are of indeterminate origin or which cannot be readily classified among the types of substances routinely examined.

Examinations performed to determine the presence or absence of specific analytes are referred to as targeted examinations. Examinations performed on general unknown substances are referred to as non-targeted examinations. Each examination is conducted in accordance with the laboratory's quality assurance system. When possible, orthogonal techniques (*i.e.*, two or more techniques predicated on different chemical principles) can be employed in order to reach a determination.

The below examination processes involving controlled substances adhere to published recommendations of the Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG).[1] Examination processes involving analysis of unknown samples related to chemical terrorism investigations adhere to published recommendations of the Scientific Working Group on the Forensic Analysis of Chemical, Biological, Radiological and Nuclear Terrorism (SWGCBRN).[2]

Upon receipt of a case, the examiner evaluates the evidence and determines the standard operating procedure(s) (SOPs) to apply. Typically, the SOP(s) employed will involve performing multiple techniques of increasing sensitivity and selectivity. These are classified as screening or confirmation techniques for targeted examinations. For

[1] Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG), *Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG) Recommendations*, Version 7.0 (August 14, 2014).

[2] Magnuson ML, Satzger RD, *et. al.*, Guidelines for the identification of unknown samples for laboratories performing forensic analyses for chemical terrorism, J. Forensic Sci., 2012 May; 57(3): 636-42.



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non-targeted examinations, the training and experience of the examiner helps dictate the initial techniques to be employed. When the weight, volume, or purity of a substance needs to be reported, a quantitative technique will be used.

**Screening Techniques**

Comment [IP2]: How much sample is consumed with these techniques?

Targeted examinations typically begin with a screening technique to test for the presence or absence of a specific analyte (*i.e.*, the substance of interest), or to indicate when further testing may be warranted. The screening technique(s) is selected based on the target analyte and the nature of the specimen. Screening techniques can include, but are not limited to:

- Gas Chromatography (GC)
- Liquid Chromatography (LC)
- Capillary Electrophoresis (CE)
- Thin Layer Chromatography (TLC)
- Chemical spot tests
- Direct Analysis in Real Time/Time-of-Flight Mass Spectrometry (DART/TOFMS)
- Ion Mobility Spectrometry (IMS)
- Ultraviolet-Visible Spectrophotometry (UV-Vis)
- Fourier Transform Infrared Spectroscopy (FTIR)

**Confirmation Techniques**

Comment [IP3]: How much sample is consumed with these techniques?

A positive screening result is confirmed by performing orthogonal analyses (when possible). The confirmatory test(s) for a target analyte is typically more specific than the screening technique. When possible, a structural elucidation technique (*i.e.*, a technique used to determine what elements are present and how they are arranged) is used. Confirmatory techniques can include, but are not limited to:

- Gas Chromatography/Mass Spectrometry (GC/MS)
- Liquid Chromatography/Mass Spectrometry (LC/MS)
- Fourier-Transform Infrared Spectroscopy (FTIR)
- Nuclear Magnetic Resonance Spectroscopy (NMR)
- X-Ray Diffractometry (XRD)
- X-Ray Fluorescence Spectrometry (XRF)
- Scanning Electron Microscopy/Energy Dispersive X-ray Spectrometry (SEM/EDS)

**Non-Targeted Examinations**

For non-targeted examinations (*i.e.*, examinations of general unknown substances), an appropriate analytical scheme is employed to chemically classify or identify the questioned substance. Examinations of unknown substances are dynamic in nature. The applied techniques and the sequence of examinations follow from the results of the most recently performed technique. The techniques used in non-targeted examinations are the



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same as those employed in targeted examinations. Examination of a general unknown substance becomes a targeted examination when a specific analyte is suspected to be present.

**Quantitative Techniques**

For the general chemistry discipline, quantitative measurements can include determining weight, volume, and purity levels of a substance. The weight of a substance is determined using a calibrated, analytical balance and is reported with an estimate of measurement uncertainty at a specified confidence level. Volume of a substance is determined using class A volumetric glassware, or calibrated instruments, and is reported with an estimate of measurement uncertainty at a specified confidence level. In instances where both the weight and volume of a substance are reported, an associated estimated measurement uncertainty and confidence level is only necessary for one of the reported measurements (unless the weight and volume are being used in combination to calculate and report the density of the substance). The purity of a substance is determined using a validated method with comparison to verified reference materials and is reported with an estimate of measurement uncertainty at a specified confidence level.

Measurement uncertainties are estimated according to a SOP, which can be derived from the Guide to the Expression of Uncertainty in Measurement (GUM),[3] a widely accepted method for determining measurement uncertainty, as well as the NIST standard operating procedure, accreditation policy, and other guidance documents.[4]

**Conclusions**

Once the examiner reaches a conclusion(s), criteria specified in the SOP(s) are used to report and testify to the conclusion(s). Typical conclusions include:

(a) Identification (class level or compound level?)
(b) ~~Consistent with~~
(c) Not identified (Negative)
(d) Cannot be differentiated
(e) Can be excluded
(f) Inconclusive
(g) Quantitative results
(h) Sampling inferences

**Comment [IP4]:** What does this mean? Consistent with a class of chemicals or specific chemical? How is this different from an identification?

[3] Joint Committee for Guides in Metrology, *Evaluation of Measurement Data - Guide to the Expression of Uncertainty in Measurement* (JCGM 100:2008 GUM 1995 with minor corrections) (1st ed. 2008).

[4] National Institute of Standards and Technology, *SOP 29- Standard Operating Procedure for the Assignment of Uncertainty*, (Gaithersburg, Maryland, February 2012), (http://www.nist.gov/pml/wmd/labmetrology/upload/SOP_29_20120229.pdf).; ASCLD/LAB-*International*, ASCLD/LAB Policy on Measurement Uncertainty, AL-PD-3060 Ver 1.0, May 1, 2013; ASCLD/LAB-*International*, ASCLD/LAB Policy on Measurement Traceability, AL-PD-3057 Ver 1.0, May 1, 2013.



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**(a) Identification**

The examiner ~~may~~ should report and testify to the identity of an analyte in a questioned sample when:

- Positive results have been obtained for an analyte within the questioned substance using orthogonal techniques, at least one of which was a structural elucidation technique;
- The pre-defined decision criteria set forth in the relevant SOP(s), which should include a confirmatory test, were satisfied for each chemical analysis that gave a positive result; and
- The analysis included the use of negative and positive controls. If a positive control is unavailable, the analysis included either comparison to peer reviewed literature; structural elucidation of the material; or comparison to a reliable library result.

**Comment [IP5]:** It is important to note here whether the identification is at a class level or if it can specifically identify a compound. Simply identifying a chemical group within a substance does not confirm the identification of a potential drug or controlled substance.

**Comment [IP6]:** This circumstance is equivalent to a "detection" result for toxicology, not an Identification. What's the difference?

An example of an identification result is: "1-Methylaminoanthraquinone was identified on Item 1."

**(b) Consistent With**

The examiner ~~may~~ should conclude that a questioned substance is consistent with a particular ~~substance~~ class of substances when:

- The analytical data does not support an identification of a specific chemical or product, but does provide reliable information to include a substance within a class of materials.

**Comment [IP7]:** If analytical data only provides class-level identification, testimony can only state that it is consistent at the class level and cannot point to consistency with a specific substance.

An example of a conclusion that a questioned substance is "consistent with" a particular substance is: "The bulk of Item 3 was consistent with an artificial sweetener."

**Comment [IP8]:** Is this an acceptable term for a measurement?

**(c) Not Identified / Negative Determination**

The examiner ~~may~~should conclude that a particular substance is not identified on or in a questioned substance when:

- The results of the analytical examinations are negative for the substance or are below an administratively set limit.

An example of a conclusion that a questioned substance is negative for a particular substance is: "No controlled substances were identified within Item 1."



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**(d) Cannot Be Differentiated**

In cases involving a comparison of samples, the examiner ~~may~~ should reach a conclusion that the samples "cannot be differentiated" from one another when:

- The results do not show any relevant differences in chemical composition between or among the samples.

Comment [IP9]: How is this term defined?

An example of a conclusion that a questioned substance "cannot be differentiated" from a particular substance is: "Colorants separated from the Item 2-1 ink could not be differentiated from colorants from either the Item 2-2 or Item 2-3 inks. Thus, the Item 2-1, 2-2, and 2-3 inks could have come from the same ~~source~~ class of sources."

**(e) Can Be Differentiated or Can Be Excluded**

In cases involving a comparison of samples, the examiner may reach a conclusion that the samples can be differentiated from one another or one sample "can be excluded" as being the source of another sample when:

- The results show relevant differences in analytical responses between or among the samples.

An example of a conclusion that a questioned substance "can be excluded" as being a particular substance is: "Propylene glycol and glycerin were identified within Item 10. This combination of chemicals was not identified within Item 11. Therefore, Item 11 can be excluded as the source of the stains on Item 10."

**(f) Inconclusive**

When none of the conclusions above can be reached, the examiner may issue an inconclusive result. The reason for the inconclusive result will be clearly stated in the report.

An example of an inconclusive result and the reason for the inconclusive result is: "Item 1 was heavily stained with a reddish-brown substance which subsequently limited the visual inspection of the item. No capsaicin or dihydrocapsaicin was identified on a sample taken from the stained area on Item 1. Although capsaicinoids were not identified within a sample taken from the Item 1 shirt, the heavy reddish-brown stains present on the item may have masked other stains and prevented them from being visualized. Therefore, no conclusion can be drawn as to the absence or presence of capsaicinoids on Item 1."

Comment [IP10]: This section needs to be made consistent with the General Chemistry ULTR language and consistent with language in other ULTRs



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**(g) Quantitative results**

*Weight*

An examiner may report the weight of a substance. All reported weights will include the following (in instances where both the weight and volume of a substance are reported, an associated estimated measurement uncertainty and confidence level is only necessary for one of the reported measurements):

- Estimation of Measurement Uncertainty; and
- Confidence Level

An example of controlled substance weight result is: "The Item 3 plant material weighed 699.3 milligrams ± 0.4 milligrams (99.7% confidence level) and was identified as marijuana."

*Volume*

An examiner may report the volume of a substance. All reported volumes will include the following (in instances where both the weight and volume of a substance are reported, an associated estimated measurement uncertainty and confidence level is only necessary for one of the reported measurements):

- Estimation of Measurement Uncertainty; and
- Confidence Level

An example of controlled substance volume result is: "Item 1 consisted of 256 milliliters ± 3 milliliters (99.7% confidence level) and was identified as γ-butyrolactone (GBL)."

*Purity*

An examiner may report the purity of a substance. All reported purities will include the following:

- Estimation of Measurement Uncertainty; and
- Confidence Level

An example of controlled substance purity result is: "Cocaine was identified in Item 1 at a purity of 65 ± 9% (99.7% confidence level).

**(h) Sampling Inferences**

When an item submitted to a laboratory for testing consists of multiple, physically similar units the entirety of the units is referred to as the population. The examiner may remove a unit(s) from the population for testing in a manner that either allows for no inference or is a statistically-based sampling approach that allows for an inference to be



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made regarding the entire population. Sampling inferences will be reported unambiguously.

*No inference*

An example of sampling that provides no inference on the population is: "1 of 100 bags was analyzed and found to contain cocaine."

*Inference on population*

An example of sampling that provides an inference being made on the entire population is: "Powder from 28 packets was analyzed using a hypergeometric sampling plan resulting in a 95% confidence level that at least 90% of the packets contain heroin."

## Considerations for Analysis and Interpretation ~~Policy Considerations~~

Comment [IP11]: "Policy Considerations" is not a very descriptive term for this section.

In 2006, Congress authorized the National Academy of Sciences (NAS) to conduct a study on forensic science and provide recommendations if warranted. The NAS convened the Committee on Identifying the Needs of the Forensic Science Community which published a 2009 report.[5] Although the report did not assess chemistry as a forensic discipline generally, it did assess the analysis of controlled substances, a forensic discipline based in forensic chemistry. In summary, the report concluded:

> The chemical foundations for the analysis of controlled substances are sound, and there exists an adequate understanding of the uncertainties and potential errors. SWGDRUG has established a fairly complete set of recommended practices. It also provides pointers to a number of guidelines for statistical sampling, both for illegal drugs per se (created by the European Network of Forensic Science Institutes) and for materials more generally (created by the American Society for Testing and Materials).[6]

The report's summary conclusions were based, in part, on the finding that:

> The analysis of controlled substances is a mature forensic science discipline and one of the areas with a strong scientific underpinning. The analytical methods used have been adopted from classical analytical chemistry, and there is broad agreement nationwide about best practices.[7]

[5] National Research Council, Committee on Identifying the Needs of the Forensic Science Community, *Strengthening Forensic Science in the United States: A Path Forward* (2009). National Academy Press: Washington, D.C. (http://www.nap.edu/catalog/12589.html).

[6] *Id.* at 135.

[7] *Id.* at 134 (citing to Smith, F and Siegel, J.A. (eds). (2004) *Handbook of Forensic Drug Analysis.* Burlington, MA: Academic Press).



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Two items specifically addressed by the NAS report are reporting of results and sampling. In an attempt to create greater uniformity among laboratories regarding the content of reports, the NAS recommended all forensic reports, regardless of disciplines, include the following: identification of the tests conducted; certain results of testing; and, potential sources of error and statistical error.[8]

The NAS report noted that "[s]ampling can be a major issue in the analysis of controlled substances."[9] The report further noted that "SWGDRUG and others have proposed statistical and non-statistical methods for sampling, and a wide variety of methods are used."[10]

[8] *Id.*

[9] *Id.*

[10] *Id.*



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**Comment ID:** 0117
**Discipline:** Fiber
**Comment Category:** Language, Underlying Science
**Name/Organization:** Madeline deLone, The Innocence Project and Innocence Network
**Summary:**
-Eliminate use of “may state or imply.” Use “should state” instead.
-Approves of statement that “number of possible fiber sources is unknown.”
-No clear basis for stating that two fibers selected at random would be unlikely to exhibit the same characteristics, so this claim should be removed.
-An “Inconclusive” category like that found in other ULTRs should be added.
-Replace “Individualization” with “Exclusion of All other Sources” for consistency.
-Incorporate the FBI error typology from the hair microscopy review.



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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0003
Fiber_Supporting Documentation_05252016

**Document:** DOJ-OLP-2016-0012-0117
Comment on FR Doc # N/A

## Submitter Information

**Name:** Madeline deLone
**Organization:** Innocence Project and Innocence Network

## General Comment

The public comments submitted by the Innocence Project and Innocence Network (see attached) regarding the Forensic Textile Fiber pULTR document are presented in track changes to the original DOJ document. These public comments are provided by the Innocence Project and the Innocence Network in the context of this process. No comment in isolation necessarily represents an official position of the Innocence Project, Innocence Network, or any member organization.

## Attachments

Fiber_pULTR Comments_IP-IN_2016-07-08

**DEPARTMENT OF JUSTICE**
**PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**
**FOR THE FORENSIC TEXTILE FIBER DISCIPLINE**

## Purpose and Scope

If adopted, this document will apply to Department of Justice personnel who perform forensic examinations and/or provide expert witness testimony regarding the forensic examination of fiber evidence. This document does not imply that statements made or language used by Department personnel that differed from these proposed statements were incorrect, indefensible, or erroneous.

This document provides the acceptable range of opinions expressed in both laboratory reports and during expert witness testimony while acknowledging that this document cannot address every variable in every examination.

## Statements Approved for Use in Fiber Examination Testimony and/or Laboratory Reports

### Fiber Classification

The examiner ~~may state or imply~~ should state that a textile fiber is natural or manufactured (man-made) and provide the basis of that determination.

**Comment [IP1]:** See general comments – the phrase "may state or imply" is vague and can be interpreted different ways. The examiner should state the properties and the conclusion that can be drawn from those properties. This comment applies to the other yellow highlighted text throughout the proposed statements.

### Natural Fibers

1. The examiner ~~may state or imply~~ should state the type of natural fiber (e.g., cotton, wool, silk).

### Manufactured Fibers

2. The examiner ~~may state or imply~~ should state the type of manufactured fiber (e.g., polyester, nylon). Where applicable, the examiner ~~may~~ shall further state ~~or imply~~ that the manufactured fiber is consistent with a particular sub-group (e.g., polyethylene terephthalate, nylon 6).

## Comparisons

### Inclusion

3. The examiner ~~may state or imply~~ should state the type of examinations that were conducted; that ~~the~~ the questioned fiber exhibits the same microscopic characteristics and optical properties as the known sample; ~~.~~ that the questioned fiber is consistent with originating from ~~the source of the known sample or from another~~ an item comprised of fibers that exhibit ~~the same~~similar microscopic characteristics and optical properties; ~~.~~ that this ~~a~~A ~~fiber association~~ inclusion is not a means of positive identification; that this comparison ~~;~~ can only produce an association at a class level (that is, to the same type of fiber, rather than to an individual source of the fiber); and that the number of possible sources for a specific fiber is unknown. ~~However, due to the variability in manufacturing,~~

**Comment [IP2]:** Is this analogous to stating that it comes from a pool of unknown size,t? If so, this is an important point. It is good that this point is being explicitly made.



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~~dyeing, and consumer use, one would not expect to encounter a fiber selected at random to be consistent with a particular source.~~ An examiner should state that there is no empirical basis to opine on the statistical strength of these conclusions and they are based on training and experience alone. If there is evidence that training and experience does improve accuracy, the examiner may state that as well. The examiner should describe the quantity and quality of information that was used to in this comparison the limitations of his/her examinations and analysis and the sources of error or uncertainty; available information on error rates and if error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.

**Comment [IP3]:** The proper limiting language is undone by this language. Comparing the similarity between a questioned fiber to a known fiber to plucking a fiber out of the universe at random creates a false sense of the strength of the inclusion.

**Exclusion**

4. The examiner ~~may state or imply~~ should state that the questioned fiber is dissimilar to the known fiber sample and accordingly, is not consistent with originating from the source of the known sample. The examiner should describe the quantity and quality of information that was used to in this comparison the limitations of his/her examinations and analysis and the sources of error or uncertainty; available information on error rates and if error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.

**Inconclusive**

5. An examiner should state that the possible source(s) of the questioned fiber cannot be determined. This conclusion is reached when there is insufficient quality and quantity of information such that the examiner is unable to include or exclude the class of the fiber.

**Comment [IP4]:** Added an "inconclusive" category be included (as is found in other ULTRs)

**Statements Not Approved For Use in Fiber Examination Testimony and/or Laboratory Reports**

~~**Individualization**~~**Exclusion of All Other Sources**

1. The examiner ~~may not state or imply~~ should not state or imply that a fiber came from a particular source to the exclusion of all other sources.
2. The examiner ~~may not state or imply~~should not state or imply that a fiber came from a particular source unless the examiner also states that the number of possible sources for a specific fiber is unknown.

**Comment [IP5]:** This is a good example of the adaptation of the Type I Error language from FBI hair microscopy review

**Statistical Weight**

3. The examiner ~~may not state or imply a~~should not state or imply a statistical weight or probability to a conclusion or provide a likelihood or statement of rareness suggesting that the questioned fiber originated from a particular source.
4. The examiner should not cite the number of cases or fiber analyses worked in the lab and the number of samples from different materials that could not be distinguished from one

**Comment [IP6]:** This is a good example of the adaptation of the Type II Error language from FBI hair microscopy review

**Comment [IP7]:** This addition incorporates the Type III Error language from the FBI hair microscopy review

another as a predictive value to bolster the conclusion that a fiber can be associated with a particular source.

**Zero Error Rate**

5. The examiner may not state or imply should not state or imply that the method used in performing fiber examinations or the examiner who conducted the analyses has a zero error rate or is infallible.



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**Comment ID:** 0118
**Discipline:** Fiber
**Comment Category:** Language, Underlying Science
**Name/Organization:** Madeline deLone, The Innocence Project and Innocence Network
**Summary:**
-Eliminate use of “may state or imply.” Use “should state” instead.
-Approves of statement that “number of possible fiber sources is unknown.”
-No clear basis for stating that two fibers selected at random would be unlikely to exhibit the same characteristics, so this claim should be removed.
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Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0002
Fiber_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0118
Comment on FR Doc # N/A

## Submitter Information

**Name:** Madeline deLone
**Organization:** Innocence Project and Innocence Network

## General Comment

The public comments submitted by the Innocence Project and Innocence Network (see attached) regarding the Forensic Textile Fiber pULTR document are presented in track changes to the original DOJ document. These public comments are provided by the Innocence Project and the Innocence Network in the context of this process. No comment in isolation necessarily represents an official position of the Innocence Project, Innocence Network, or any member organization.

## Attachments

Fiber_pULTR Comments_IP-IN_2016-07-08

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**FOR THE FORENSIC TEXTILE FIBER DISCIPLINE**

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## Comparisons

### Inclusion

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**Comment [IP2]:** Is this analogous to stating that it comes from a pool of unknown size,t? If so, this is an important point. It is good that this point is being explicitly made.



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~~dyeing, and consumer use, one would not expect to encounter a fiber selected at random to be consistent with a particular source.~~ An examiner should state that there is no empirical basis to opine on the statistical strength of these conclusions and they are based on training and experience alone. If there is evidence that training and experience does improve accuracy, the examiner may state that as well. The examiner should describe the quantity and quality of information that was used to in this comparison the limitations of his/her examinations and analysis and the sources of error or uncertainty; available information on error rates and if error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.

**Comment [IP3]:** The proper limiting language is undone by this language. Comparing the similarity between a questioned fiber to a known fiber to plucking a fiber out of the universe at random creates a false sense of the strength of the inclusion.

**Exclusion**

4. The examiner ~~may state or imply~~ should state that the questioned fiber is dissimilar to the known fiber sample and accordingly, is not consistent with originating from the source of the known sample. The examiner should describe the quantity and quality of information that was used to in this comparison the limitations of his/her examinations and analysis and the sources of error or uncertainty; available information on error rates and if error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.

**Inconclusive**

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**Comment [IP4]:** Added an "inconclusive" category be included (as is found in other ULTRs)

**Statements Not Approved For Use in Fiber Examination Testimony and/or Laboratory Reports**

~~**Individualization**~~**Exclusion of All Other Sources**

1. The examiner ~~may not state or imply~~ should not state or imply that a fiber came from a particular source to the exclusion of all other sources.
2. The examiner ~~may not state or imply~~should not state or imply that a fiber came from a particular source unless the examiner also states that the number of possible sources for a specific fiber is unknown.

**Comment [IP5]:** This is a good example of the adaptation of the Type I Error language from FBI hair microscopy review

**Statistical Weight**

3. The examiner ~~may not state or imply a~~should not state or imply a statistical weight or probability to a conclusion or provide a likelihood or statement of rareness suggesting that the questioned fiber originated from a particular source.
4. The examiner should not cite the number of cases or fiber analyses worked in the lab and the number of samples from different materials that could not be distinguished from one

**Comment [IP6]:** This is a good example of the adaptation of the Type II Error language from FBI hair microscopy review

**Comment [IP7]:** This addition incorporates the Type III Error language from the FBI hair microscopy review

another as a predictive value to bolster the conclusion that a fiber can be associated with a particular source.

**Zero Error Rate**

5. The examiner may not state or imply should not state or imply that the method used in performing fiber examinations or the examiner who conducted the analyses has a zero error rate or is infallible.



Deliberative & Pre-Decisional

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**Comment ID:** 0119
**Discipline:** SD Fiber
**Comment Category:** Language, Underlying Science
**Name/Organization:** Madeline deLone, The Innocence Project and Innocence Network
**Summary:**
-The textile industry's work in analyzing fibers is not relevant to the review.
-No clear basis for stating that two fibers selected at random would be unlikely to exhibit the same characteristics, so this claim should be removed.
-Should state that fiber examination can only affect a class-level association and nothing more.
-Support statement that "the specific number of sources that exhibit the same… chracteristics as a questioned fiber cannot be determined".
-Clarify the "general procedure" for textile fiber comparisons.
-Replace "indistinguishable" with "found to be similar" and "same item" with "same characteristics."
-Replace "Policy Considerations" with "Considerations for Analysis and Interpretation".
-Expand discussion on distinction between reliability and studies showing error rate or statistical validity.



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# PUBLIC SUBMISSION

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Comment on FR Doc # N/A

## Submitter Information

**Name:** Madeline deLone
**Organization:** Innocence Project and Innocence Network

## General Comment

The public comments submitted by the Innocence Project and Innocence Network (see attached) regarding the Forensic Textile Fiber Supporting Documentation are presented in track changes to the original DOJ document. These public comments are provided by the Innocence Project and the Innocence Network in the context of this process. No comment in isolation necessarily represents an official position of the Innocence Project, Innocence Network, or any member organization.

## Attachments

Fiber_Supporting Documentation Comments_IP-IN_2016-07-08



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**SUPPORTING DOCUMENTATION FOR DEPARTMENT OF JUSTICE PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS FOR THE FORENSIC TEXTILE FIBER DISCIPLINE**

## Background

The examination and comparison of textile fibers has been conducted for over a century. Early practices for textile identifications utilized compound light microscopy and chemical tests as the preferred methods.[1] Since that time, there have been numerous publications describing the examination, identification, and comparison of fibers utilizing various techniques.[2] Many of these techniques were developed and utilized by the textile industry[3] and adopted by the forensic science community. To date, the most common comparative methods employed for forensic purposes are comparison microscopy, polarized light microscopy, fluorescence microscopy, microspectrophotometry, and infrared spectroscopy.

**Comment [IP1]:** While it is notable that the textile industry has conducted analyses on fibers for this length of time, the relevant period here is when the testing was adopted for forensic use and to what extent research supported its forensic applications.

A textile fiber is the basic element of textile materials such as apparel, carpeting, furniture, and cordage. A fiber can be natural (*e.g.*, cotton, wool, flax) or manufactured (*e.g.*, polyester, nylon, acrylic) and can be combined with other fibers in various ways to produce fabrics (*e.g.*,

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[1] Matos, Louis J. (1915). The Identification of Textile Fibers. *Textiles*, pg. 16; Matos, Louis J. (1919). The Identification of Textile Fibers, Part 1. *Textiles*, 13-14; Matos, Louis J. (1919). The Identification of Textile Fibers, Part 2. *Textiles*, 16.

[2] American Society for Testing and Materials (1987): Standard Test Methods for Identification of Fibers in Textiles. ASTM D 276-87.; Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 13; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.; American Society for Testing and Materials (2008): Standard Guide for Forensic Analysis of Fibers by Infrared Spectroscopy. ASTM E 2224-02.

[3] Heyn, A.N.J. (1953). The Identification of Synthetic Fibers by Their Refractive Indices and Birefringence, *Textile Research Journal*, 23:246-251.; E.I. Du Pont de Nemours & Company. (1961): Identification of Fibers in Textile Materials. Technical Information Bulletin X-156.; The Textile Institute, Manchester (1985). Identification of Textile Materials, Manara Printing Services, London.; American Association of Textile Chemist and Colorists, AATCC Technical Manual, Research Triangle Park, NC; Mukhopadhyay, S. (2003). FTIR Spectroscopy – Principles and Applications. *Journal of the Textile Association*, 64 (4), 187-191.; Brady, Jr., R.F. (2003). Comprehensive Desk Reference of Polymer Characterization and Analysis: Polymer Characterization and Analysis, American Chemical Society and Oxford University Press, New York, NY.



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knit, woven, non-woven).[4] These fabrics may lose fibers from their structure that can be transferred directly or indirectly from one location to another. The transfer and detection of fibers depends on the nature of the contact, the type of donor and recipient material, and the movement of the recipient following a transfer.[5]

Textile fibers recovered from an item can be analyzed to identify whether it is natural or manufactured. Natural fibers may be further examined to determine the type of fiber (*e.g.*, cotton, wool, or flax). Manufactured fibers may be further examined to identify the type of manufactured fiber (*e.g.*, polyester, olefin, or acrylic) as well as the sub-group (*e.g.*, polyacrylonitrile methylacrylate or polypropylene). Furthermore, textile fibers may be examined to determine whether or not the questioned fiber is consistent with originating from a known source. Because textiles are mass produced, it cannot be concluded that a fiber originated from a particular source to the exclusion of all others. ~~However, due to variations in the textile fiber population and the combination of techniques utilized for comparisons, one would not expect to encounter two fibers selected at random to exhibit the same microscopic characteristics and optical properties.~~[6]

**Comment [IP2]:** The basis for this phrase is not clear. The NAS report specifically notes that there have been no studies that support this kind of statement, and the citations provided do not provide a basis for countering the NAS's evaluation

This last sentence seems to directly contradict the sentence that precedes it.

**Theory of Textile Fiber Examination**

The examination of fibers relies on differences in microscopic characteristics and optical properties to classify and distinguish fibers. Studies have demonstrated that there is considerable variance in the fiber population, and that it would be unusual to encounter a fiber selected at random to be consistent with a particular source.[7] In a 2005 publication by Grieve et al., the authors stated the following:

**Comment [IP3]:** This statement provides a false sense of the strength of an association. It would certainly be unusual to encounter a fiber that is consistent with a questioned fiber if it was plucked from the universe of fibers. Rather, it should be stated here that fiber examination can only effect a class-level association and nothing more.

[4] Hatch, K.L. (1993). Textile Science. West Publishing Company, St. Paul, MN. Chapter 1.; Robertson, J. and Grieve, M. (1999); Forensic Examination of Fibres, London: Taylor and Francis, Chapters 1 and 2.

[5] Pounds,C.A.; Smalldon, K.W. (1975): The transfer of fibres between clothing materials during simulated contacts and their persistence during wear. Part I--fibre transference. *Journal of Forensic Science,* 15, 17-27; Pounds,C.A.; Smalldon, K.W. (1975): The transfer of fibres between clothing materials during simulated contacts and their persistence during wear. Part II--fibre persistence. *Journal of Forensic Science,* 15, 29-37; Pounds,.C.A.; Smalldon, K.W. (1975): The transfer of fibres between clothing materials during simulated contacts and their persistence during wear. Part III--a preliminary investigation of the mechanisms involved. *Journal of Forensic Science,* 15, 197-207; Robertson, J. and Grieve, M. (1999); Forensic Examination of Fibres, London: Taylor and Francis, Chapter 5.

[6] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 1, Section 5.; Grieve, M.C., Biermann, T.W., and Schaub, K. (2005). The individuality of fibers used to provide forensic evidence – not all blue polyesters are the same, *Science and Justice*, 45: pp 13-28.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 13; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.

[7] Palmer, R., Hutchinson, W., Fryer, V. (2009). The discrimination of (non-denim) blue cotton. *Science & Justice,* 49, 12-18.; Palmer, Ray; Chinherende, Vongai (1996). A Targer Fiber Study Using Cinema and Car Seats as Recipient Items. *Journal of Forensic Sciences*, 41: 802-803. Grieve, M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.; Houck, Max (2003) Inter-comparison of unrelated fiber evidence, *Forensic Science International*, 135: 146-149. Jones, T. and Coyle, T. Synthetic flock fibres: a population and target fibre study. *Sci. Justice* 51(2), 68-71 (2010); Cook, R., and Wilson, C. The significance of finding extraneous fibers in contact cases. *Forensic Sci. Int.* 32 (4), 267-273 (1986); Jackson, G. and Cook, R. The significance of fibers found on car seats.



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> Fibres used in forensic casework suffer from a disadvantage common to other forms of trace evidence – it is not possible to state with absolute certainty that they originate from a specific source. Target fibre studies, population studies and research on 'blocks of colour' have effectively demonstrated the polymorphism of textile fibres (particularly man-made ones) and have shown that when a fibre is believed to have a specific putative source, the chance that it was from a different source purely by coincidence is extremely remote.[8]

Similar statements have been made by other authors due to studies that demonstrated variance in the fiber population.[9] In a study by Houck, [10] colored fibers from twenty unrelated cases were compared using FBI Laboratory procedures. Of the 2083 compared fibers, 1979 (95%) were distinguished utilizing comparison microscopy and polarized light microscopy, while the remaining 5% were distinguished with fluorescence microscopy and microscopectrophotometry. According to Houck, none of the 2083 fibers "…selected at random exhibited the same microscopic characteristics and optical properties; phrased another way, no incidental positive associations were found."[11] In another study, Grieve *et al* [12] compared 255 garments of the same fiber type and color (blue polyester) using comparison microscopy, polarized light microscopy, fluorescence microscopy, and microspectrophotometry. Blue polyester was chosen since it is one of the most common fiber types and colors in the fiber population. Of the 255 blue polyester samples, 9 pairs could not be distinguished, six of which were determined to be from the same brand name. Brand names from the remaining three pairs could not be determined.

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*Forensic Sci. Int.* 32 (4), 275-281 (1986); Cook, R. and Salter A.-M. The significance of finding extraneous fibres on clothing. IAFS, Dusseldorf, 1993; Bruschweiler,W. and Grieve, M.C. A study on the random distribution of a red acrylic target fibre. *Sci Justice* 37 (2) 85-89 (1997); Cook, R., WebbSalter, M.T., and Marshall, L. The significance of fibres found in head hair. *Forensic Sci. Int.* 87 (2) 155-160 (1997); Kelly, E. and Griffin, R. A target fibre study on seats in public houses. *Sci. Justice* 38 (1) 39-44 (1998); Wiggins, K., Drummond, P., and Champod, T.H. A study in relation to the random distribution of four fibre types on clothing – (incorporating a review of previous target fibre studies). *Sci. Justice* 44 (3) 141-148 (2004); Coyle, T., Shaw, C., and Stevens, L. The evidential value of fibres used in 'Hi-Vis'work wear. https://www.researchgate.net/publication/259325803_The_evidential_value_of_fibres_used_in_Hi-Vis_workwear; Palmer, R., Burnett, E., Luff, N., Wagner, C., Stinga, G., Carney, C., and Sheridan, K. The prevalence of two 'commonly' encountered synthetic target fibres within a large urban environment. *Sci. Justice* 55, 103-106 (2015).

[8] Grieve, M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.

[9] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 1, Section 5.5; Palmer, Ray; Chinherende, Vongai (1996). A Targer Fiber Study Using Cinema and Car Seats as Recipient Items. *Journal of Forensic Sciences*, 41: 802-803.; Wiggins, K; Drummond, P; and Champod, T Hicks (2004), A study in relation to the random distribution of four fibre types on clothing (incorporating a review of previous target fibre studies), *Science and Justice*, 44: 141-148.

[10] Houck, M. (2003) Inter-comparison of unrelated fiber evidence, *Forensic Science International*, 135: 146-149.

[11] *Id.* at 148-149.

[12] Grieve,M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.



Deliberative & Pre-Decisional

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One explanation for this variance is the variety of different fibers that are produced based on the textile industry's requirements for specific end-use and performance. The textile industry is comprised of thousands of fiber manufacturers and textile mills worldwide, and is constantly changing to satisfy demand and expected performance.[13] These manufacturers produce fibers of various type, size, and cross-sectional shape, and introduce other microscopic characteristics through the manufacturing and/or finishing process (*e.g.*, delustering, voids, birefringence, mercerizing, texturing), typically for a desired result in the end-product.[14] Another contributing factor to variance in the fiber population is the dyeing process, in which color is added to either the fiber, yarn, fabric, or textile. There are thousands of dyes available for textiles, and the specific color requested by a consumer is usually achieved using a combination of dyes. Studies have shown that even different dye batches of the same product type can be distinguished.[15] Consumer use and wear of the textile product also accounts for some of the variance in the fiber population. Sunlight exposure, laundering, and other environmental effects can have an impact on the fiber's microscopic characteristics and optical properties.[16]

Ironically, the variance described above that makes fiber associations meaningful also complicates interpreting its significance. Studies have demonstrated that variation in the microscopic characteristics and optical properties of fibers provides meaningful comparisons.[17] However, due to the many variables involved, the specific number of sources that exhibit the same microscopic characteristics and optical properties as a questioned fiber cannot be determined.

**Comment [IP4]:** This statement is critical to understanding the meaning of a fiber association and we support its use here.

[13] World Directory of Manufactured Fiber Producers, Fiber Economics Bureau, Arlington, VA; Davison's Textile Blue Book, Davison Publishing Co., Inc, Concord, NC.

[14] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49. Hatch, K.L. (1993). Textile Science, West Publishing Company, St. Paul, MN.

[15] Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 10; Palmer, R. (1995). A Survey of Dye Batch Variation, *Science and Justice*. 35, 59-64.; Wiggins, K., Cook, R. and Turner Y. (1988). Dye Batche Variation in Textile Fibers, Journal of forensic Sciences, 33:4, pp. 998-1007.; Wiggins, K. and Holmes, J.A. (2005). A further study of dye batch variation in textile and carpet fibres. *Science and Justice*, 45:2, 94-96.

[16] American Association of Textile Chemist and Colorists, AATCC Technical Manual, Research Triangle Park, N.C.; Was-Gubala, J. (2009). The kinetics of colour change in textiles and fibres treated with detergent solutions Part I – Colour perception and fluorescence microscopy analysis. *Science and Justice,* 49, 165-169. Was-Gubala, J., Grzesiak, E. (2010). The kinetics of colour change in textiles and fibres treated with detergent solutions Part II – Spectrophotometric measurements. *Science and Justice,* 50, 55-58.

[17] Grieve, M.C., Biermann, T.W., and Schaub, K. (2005) The individuality of fibers used to provide forensic evidence - not all blue polyesters are the same, *Science and Justice*, 45: 13-28.; Houck, Max (2003) Inter-comparison of unrelated fiber evidence, *Forensic Science International*, 135: 146-149.; Palmer, R., Hutchinson, W., Fryer, V. (2009). The discrimination of (non-denim) blue cotton. *Science & Justice,* 49, 12-18.; Palmer , Ray; Chinherende, Vongai (1996). A ~~Targer~~ Target Fiber Study Using Cinema and Car Seats as Recipient Items. *Journal of Forensic Sciences*, 41: 802-803.



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**Textile Fiber Comparison Process**

There are different methodologies and processes for conducting a fiber examination. The Department shares information regarding some appropriate processes below. The Department does not suggest that the processes outlined here are the only valid or appropriate processes.

The general procedure for textile fiber comparisons begins with a side-by-side examination of the microscopic characteristics. A comparison microscope (approximately 50x- to 600x-magnification) is required to visualize and compare the microscopic characteristics. For natural fibers, characteristics such as color, surface color, color variation, shape, and diameter are compared. Additional characteristics such as the presence and size of voids, delustrant, manufacturing striations, pigment, and inclusions may be observed when comparing manufactured fibers (Figure 1).[18]

**Comment [IP5]:** Please clarify the procedures that are being proposed here. Is this comparing one fiber to one fiber? Or one fiber to a sample of a specified size from a particular source? If so, how is the sample size and sampling procedure determined?

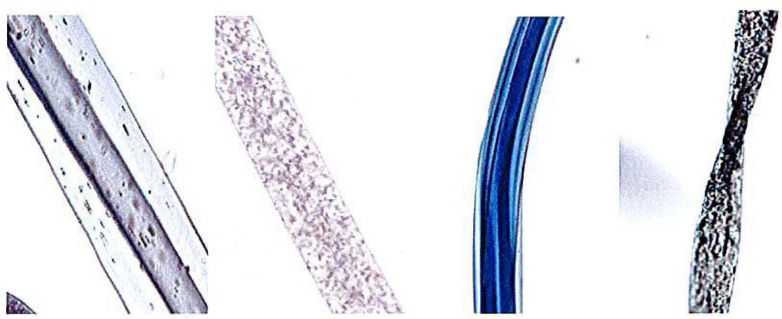

Figure 1: Images of manufactured fibers.

If fibers are indistinguishable utilizing comparison microscopy, they are further examined with polarized light microscopy. For natural and manufactured fibers, polarized light microscopy can determine if the fibers display different colors when viewed at different orientations to polarized light.[19] For manufactured fibers, characteristics such as the relative refractive index[20] and estimated birefringence[21] are also compared. The properties observed

[18] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.

[19] Polarized light is light that has been altered so that vibrations occur in a single plane. A polarized light microscope is equipped with filters capable of producing polarized light.

[20] Refractive index is the ratio of the speed of light in a material compared to the speed of light in a vacuum. Textile fibers have two refractive indices, one parallel ($n_{\parallel}$) to the fiber axis and one perpendicular ($n_{\perp}$). These refractive indices are measured relative to the mounting medium the fibers are in when prepared on glass microscope slides (*e.g.*, Permount®).



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depend on the type of fiber (*e.g*, polyester, nylon) and the orientation of the molecules along the fiber's axis.[22]

Fibers that are indistinguishable utilizing comparison microscopy and polarized light microscopy are further compared using fluorescence microscopy. Fluorescence is emission of light at a longer wavelength following excitation by light of shorter wavelength. With fluorescence microscopy, fibers are illuminated at four distinct wavelength ranges so that the color and intensity of the fiber's fluorescence can be documented and compared (Figure 2). Dyes, optical brighteners and other additives can contribute towards the observed fluorescence.[23]

Figure 2: Images of the same set of fibers viewed with A) transmitted light microscopy; B) fluorescence microscopy using 450nm-490nm excitation; C) fluorescence microscopy using 510nm – 560nm excitation.

If colored fibers cannot be distinguished utilizing comparison microscopy, polarized light microscopy, and fluorescence microscopy, they are further examined and compared with microspectrophotometry. Microspectrophometry (MSP) is used to compare the fiber's absorption of ultraviolet and/or visible light. This method provides an instrumental means for analyzing the fiber color, and can distinguish fibers that have the same visual color using comparison microscopy.[24]

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[21] Birefringence is the difference between the fiber's refractive indices ($n_{\parallel} - n_{\perp}$). An estimated value of the birefringence can be calculated using a polarized light microscope that is equipped with two polarizing filters.

[22] Rochow, T.G. and Tucker, P.A. (1994). Introduction to Microscopy by Means of Light, Electrons, X Rays, or Acoustics, Plenum Publishing Corporation, New York, NY.; Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7; Houck, M.M. (2005). Forensic Fiber Examination and Analysis, Forensic Science Review, 17: 29, pp 30-49.

[23] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 2.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 7.

[24] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 3.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 10.; Houck, M., Walbridge-Jones, S., (2009). Forensic Identification of textile fibers: Chapter 9 – Microspectrophotometry for textile fiber color measurement. The Textile Institute, Woodhead Publishing Limited, Cambridge, England.

If manufactured fibers are not distinguished using the methods above, fibers will be examined using infrared spectroscopy. Infrared spectroscopy detects the fiber's absorption of infrared radiation. While the technique is typically not as discriminating as the techniques listed above, it provides additional information about the chemical structure of the fiber and allows for the characterization and comparison of polymer composition. Natural fibers are not examined using infrared spectroscopy since the technique provides no additional compositional information.[25]

If the fibers are ~~indistinguishable~~found to be ~~-~~similar in microscopic and optical characteristics utilizing the applicable techniques described above, it can be concluded that the fibers are ~~consistent with~~may have ~~originating~~ originated from ~~the same item, or another~~ an item comprised of fibers that exhibit the same microscopic characteristics and optical properties. If the fibers can be distinguished using any of the techniques described above, it can be concluded that the fibers are not consistent with originating from an item with these same characteristics~~the same item~~.

**Comment [IP6]:** The statement "consistent with originating from the same item" provides a false sense of the strength of the similarity of a questioned and known fiber from "the same item" is equally as likely as originating from an item comprised of fibers exhibiting the same microscopic and optical characteristics. It would be less misleading to simply state that the fibers share these characteristics and that their dissimilarities cannot be evaluated using the applied techniques, but it does not mean they came from the same item.

## ~~Policy~~ Considerations for Analysis and Interpretation

**Comment [IP7]:** "Policy Considerations" is not a very descriptive term for this section.

In 2006, Congress authorized the National Academy of Sciences (NAS) to conduct a study on forensic science which culminated in a 2009 report.[26] The NAS report of 2009 reiterated the basis, benefit, and limitations for the long established forensic discipline of fiber analysis, specifically noting its use for the comparison of sample(s) to a class of fibers and its inability to be used for the individualized matching of a sample fiber to a single source:~~:~~

> Fibers associated with a crime—including synthetic fibers such as nylon, polyester and acrylic as well as botanical fibers such as ramie or jute, which are common in ropes or twines—can be examined microscopically in the same way as hairs, and with the same limitations. However, fibers also can be analyzed using the tools of analytical chemistry, which provide a more solid scientific footing than that underlying morphological examination. In some cases, clothing and carpets have been subjected to relatively distinctive environmental conditions (*e.g.*, sunlight exposure or laundering agents) that impart characteristics that can distinguish particular items from others from the same manufacturing lot. Fiber examiners agree, however, that none of these characteristics is suitable for individualizing fibers (associating a fiber from a crime scene with one, and only one, source) and that fiber evidence can be used only to associate a given fiber with a class of fibers.[27]

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[25] Scientific Working Group on Materials Analysis (SWGMAT), Forensic Fiber Examination Guidelines, *Forensic Science Communications*, Apr. 1999, vol. 1, no. 1, Chapter 6.; Robertson, J. and Grieve, M. (1999). Forensic Examination of Fibres, London: Taylor and Francis, Chapter 8.

[26] ----. (2009). National Research Council. Strengthening Forensic Science in the United States: A Path Forward (Summary and Friction Ridge Analysis section from Chapter 5). National Academy Press: Washington, D.C. (http://www.nap.edu/catalog/12589.html).

[27] NAS report at 161, citing, *e.g.*, Breese, R.R. (1987) Evaluation of textile fiber evidence: A review. *J. For Sci.* 32 (2), 510-11; SWGMAT. (1999) Introduction to forensic fiber examination. *For. Sci. Comm.* 1 (1), available at www.fbi.gov/hq/lab/fsc/backissu/april1999/houcktoc.htm.



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The NAS report highlighted several areas for improvement within the generally accepted scientific standards of fiber analysis. It noted that there have been guidelines, "but no set standards for the number and quality of characteristics that must correspond in order to conclude that two come from the same manufacturing source." It is also noted that there have been no studies of fiber variability during or after manufacturing, and "no studies ~~One area it identified was that there "have been no studies~~ to inform judgments about whether environmentally related changes discerned in particular fibers are distinctive enough to reliably individualize their source"[28]. While it has been established that the environment can have an impact on the microscopic characteristics and optical properties of fibers,[29] it is doubtful that these changes would ever allow individualization to a single source.

A second area highlighted in the NAS report was that there "have been no studies that characterize either reliability or error rates in the procedures."[30] ~~While it is true that no studies have identified "error rates in the procedures" or studies to show the statistical probability of a coincidental fiber association, numerous studies (referenced previously) have been published demonstrating the reliability of fiber examination procedures.~~

**Comment [IP8]:** Expand this discussion. Repeatability is not the same as accuracy or validity. This distinction is crucial, and this document would benefit from clarification of this distinction.

The third point highlighted in the NAS summary is that understanding of measurement uncertainties is feasible, but has~~ve~~ not been developed for the various analytical procedures utilized by fiber examiners. For some of the analytic techniques, (e.g., those involving chemical analysis) there should be few impediments to conducting quantitative uncertainty analysis.[33]

~~The NAS report also made the following assertion:~~

> ~~A group of experienced paint [*sic*] examiners, the Fiber Subgroup of the Scientific Working Group on Materials Analysis (SWGMAT), has produced guidelines, but no set standards, for the number and quality of characteristics that must correspond in order to conclude that two fibers came from the same manufacturing batch. There have been no studies of fibers (*e.g.*, the variability of their characteristics during and after manufacturing) on which to base such a threshold.[31]~~

~~SWGMAT has indeed produced guidelines covering the forensic examination of fibers. However, fiber examiners have long realized that associating fibers to a given dye (manufacturing) batch is a goal that cannot be reached. There have been a few studies demonstrating the ability to sometimes distinguish between different dye batches, however, fiber examiners cannot conclude that fibers came from the same batch since different batches cannot always be distinguished.[32]~~

**Comment [IP9]:** The point of this discussion is not clear. This whole section would be better presented simply by noting the points on pages 162-163 of the NAS report

[28] NAS report at 162-163.

[29] American Association of Textile Chemist and Colorists, AATCC Technical Manual, Research Triangle Park, N.C.; Was-Gubala, J. (2009). The kinetics of colour change in textiles and fibres treated with detergent solutions Part I – Colour perception and fluorescence microscopy analysis. *Science and Justice,* 49, 165-169. Was-Gubala, J., Grzesiak, E. (2010). The kinetics of colour change in textiles and fibres treated with detergent solutions Part II – Spectrophotometric measurements. *Science and Justice,* 50, 55-58.

[30] NAS report at 163.

[31] NAS report at 162-163.

[32] Palmer, R. (1995). A Survey of Dye Batch Variation, *Science and Justice*. 35, 59-64.; Wiggins, K., Cook, R. and Turner Y. (1988). Dye Batch Variation in Textile Fibers, Journal of forensic Sciences, 33:4, pp. 998-1007; Wiggins, K. and Holmes, J.A. (2005). A further study of dye batch variation in textile and carpet fibres. *Science and Justice*, 45:2, 94-96.



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The NAS report addressed the fact that measurement uncertainties have not been developed for the various analytical procedures utilized by fiber examiners: "[b]ecause the analysis of fibers is made largely through well-characterized methods of chemistry, it would be possible in principle to develop an understanding of the uncertainties associated with those analyses."[33]

Finally, the NAS report summarized facts that are widely accepted in the forensic science community, that "…a 'match' means only that the fibers could have come from the same type of garment, carpet, or furniture; it can provide class evidence…"[34], and that "[f]iber analyses are reproducible across laboratories because there are standardized procedures for such analyses."[35]

[33] NAS report at 163, citing to Breese, R.R. (1987) Evaluation of textile fiber evidence: A review. *J. For Sci.* 32 (2), 510-11.

[34] NAS report at 163.

[35] *Id.*



Deliberative & Pre-Decisional

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**Comment ID:** 0120
**Discipline:** Footwear and Tire
**Comment Category:** Language, Underlying Science
**Name/Organization:** Madeline deLone, The Innocence Project and Innocence Network
**Summary:**
-Change inclusion categories to be consistent with other documents. (e.g. Inclusion, Exclusion, Inconclusive).
-Definitions given for inclusion, probably made, and could have made, are not distinct from one another.
-Should note that when a shoe mark is indistinguishable, there is no way of knowing how many other shoes/tires would also be indistinguishable.
-Eliminate use of “may state or imply.”
-Should give examples of the significant limiting factors referenced in the “Could Not Be Determined” section.
-The statement that there may be circumstances which require the examiner to deviate from the guidelines of the “Not Approved” section is not in any other ULTR and should be removed.
-Incorporate the error taxonomy from the FBI Hair review.



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# PUBLIC SUBMISSION

**As of:** July 12, 2016
**Received:** July 08, 2016
**Status:** Posted
**Posted:** July 11, 2016
**Tracking No.** 1k0-8qna-ik0y
**Comments Due:** July 08, 2016
**Submission Type:** Web

**Docket:** DOJ-OLP-2016-0012
Notice of Public Comment Period on Proposed Uniform Language for Testimony and Reports

**Comment On:** DOJ-OLP-2016-0012-0004
Footwear Tiretread_pULTR_05252016

**Document:** DOJ-OLP-2016-0012-0120
Comment on FR Doc # N/A

## Submitter Information

**Name:** Madeline deLone
**Organization:** Innocence Project and Innocence Network

## General Comment

The public comments submitted by the Innocence Project and Innocence Network (see attached) regarding the Forensic Footwear and Tire Impression pULTR document are presented in track changes to the original DOJ document. These public comments are provided by the Innocence Project and the Innocence Network in the context of this process. No comment in isolation necessarily represents an official position of the Innocence Project, Innocence Network, or any member organization.

## Attachments

Footwear and Tire Impressions_pULTR Comments_IP-IN_2016-07-08

**DEPARTMENT OF JUSTICE**
**PROPOSED UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS**
**FOR THE FORENSIC FOOTWEAR AND TIRE IMPRESSION**
**DISCIPLINE**

**Purpose and Scope**

If adopted, this document will apply to Department of Justice personnel who perform forensic examinations and/or provide expert witness testimony regarding the forensic examination of footwear/tire impression evidence. This document does not imply that statements made or language used by Department personnel that differed from these proposed statements were incorrect, indefensible, or erroneous.

This document provides the acceptable range of opinions expressed in both laboratory reports and during expert witness testimony while acknowledging that this document cannot address every variable in every examination.

**Statements Approved for Use in Laboratory Reports and Expert Witness Testimony Regarding Forensic Examination of Footwear and Tire Impression Evidence**

The following is the range of opinions approved for use by the examiner in both laboratory reports and when providing expert witness testimony.

**Comment [IP1]:** These categories should be made to be consistent with those in other ULTRs (e.g., Inclusion, Exclusion, Inconclusive)

**Comparisons**

**Inclusion**
~~**Identification**~~

1. The examiner ~~may state or imply~~ should state the type of examinations that were conducted, including number and type of features evaluated; that the questioned impression originated from a shoe/tire that is similar to the known shoe/tire in all of the measured or observed characteristics. This conclusion is reached when an impression and the known shoe/tire correspond in class characteristics and in all randomly acquired characteristics that were assessed; that this comparison can only produce an association at a class level (that is, to the same type of shoe/tire, rather than to an individual source of the impression).

   The examiner should state that there is an insufficient empirical basis to opine on the statistical strength of these conclusions as there is inadequate data to support a valid estimate of the frequency of this arrangement of features, and therefore, the inclusion decision is based on training and experience alone. The examiner should state how appropriately designed and conducted studies utilizing samples replicating casework demonstrate how training and experience increase accuracy, the limitations of the examinations and analyses, the sources of error or uncertainty, and report available information on error rates. If the relevant error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.

**Comment [IP2]:** The definitions given here for identification, probably made, and could have made are not distinct from each other. These categories should be combined into a single "inclusion" category. The basis for this designation (i.e., the class characteristics, and the randomly acquired characteristics, if any, that were assessed) should be stated.

**Comment [IP3]:** See general comments – the phrase "may state or imply" is vague and can be interpreted different ways. The examiner should state the properties and his or her opinion about the conclusion that can be drawn from those properties. This comment applies to the other yellow highlighted text throughout the proposed statements.

**Comment [dd4]:** I would insert the pool of unknown size language:

That there is currently no way of knowing how many other shoes/tires would also is indistinguishable from the known shoe/tire in all of the measured or observed characteristics.



Deliberative & Pre-Decisional

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If a database was used in the process, the testimony and report should reflect that the source originated from a database search and document the additional precautions that have been taken to avoid a false positive inclusions.

~~The examiner may state that it is his/her opinion that the shoe/tire is the source of the impression because there is sufficient quality and quantity of corresponding features such that the examiner would not expect to find that same combination of features repeated in another source. This is the highest degree of association between a questioned impression and a known source. This opinion requires that the questioned impression and the known source correspond in class characteristics and also share one or more randomly acquired characteristics. This opinion acknowledges that an identification to the exclusion of all others can never be empirically proven.~~

Comment [IP5]: What is the scientific premise for this statement, what is it based on?

**~~Probably Made~~**

~~2. The examiner may state that it is his/her opinion that the shoe/tire probably made the impression and it is unlikely that another shoe/tire is the source of the impression; however, there are limitations which prevent effecting an identification. This opinion indicates a high degree of association between the questioned impression and the known source, which is based on the correspondence of class characteristics in combination with specific wear and/or randomly acquired characteristics.~~

Comment [IP6]: Based on what? The limitations for this conclusion should be explained

**~~Could Have Made~~**

~~3. The examiner may state that it is his/her opinion that the shoe/tire is a possible source of the impression, but other shoes/tires with the same class characteristics are also included in the population of possible sources. This opinion indicates an association of class characteristics (i.e., outsole design and physical size for shoes, tread design and tread dimension for tires) between the questioned impression and the known source. Correspondence of general wear may also be present.~~

**Exclusion**

2. The examiner ~~may~~ should state that the shoe/tire is not the source of the impression. This can be concluded when ~~opinion is the highest degree of non-association between a questioned impression and a known source. This opinion requires~~ an observable difference in class and/or randomly acquired characteristics between the questioned impression and the known source is found. The examiner should describe the quantity and quality of information that was used to in this comparison the limitations of his/her examinations and analysis and the sources of error or uncertainty; available information on error rates and if error rates have not been empirically determined, an examiner shall also state that no error rate studies of sufficient design and statistical power have been conducted, so the error rate of this discipline is unknown.



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~~Could Not Be Determined~~
**Inconclusive**

34. The examiner ~~may~~ should state that ~~it is his/her opinion~~the possible source(s) of the impression ~~that it~~ could not be determined ~~if the known shoe/tire is the source of the impression~~. This ~~opinion~~ conclusion is reached when ~~indicates that similarities and/or differences in class characteristics were noted between the questioned impression and the known source, but~~ there are significant limiting factors within the evidence that do not allow for a ~~specific association or non-association~~ an inclusion or exclusion, or no discernible footwear/tire impressions were observed on the questioned item which prevents the examiner from conducting any comparisons.

**Comment [IP7]:** What are examples of limiting factors? These should be discussed in the Supporting Documentation

~~Indications Did Not Make~~

~~5. The examiner may state that it is his/her opinion that the evidence indicates that the shoe/tire is not the source of the impression, but there are limitations which prevent eliminating the shoe/tire. This opinion indicates a degree of non-association between the questioned impression and the known source, which is based on observed dissimilarities.~~

~~Elimination~~

~~6. The examiner may state that the shoe/tire is not the source of the impression. This opinion is the highest degree of non-association between a questioned impression and a known source. This opinion requires an observable difference in class and/or randomly acquired characteristics between the questioned impression and the known source.~~

~~Unsuitable~~

~~7. The examiner may state that it is his/her opinion that the submitted evidence is unsuitable to conduct footwear/tire examinations. This opinion indicates one of the following: there are significant limitations which prevent the examiner from conducting a meaningful comparison between the questioned impression and the known source; or no discernible footwear/tire impressions were observed on the questioned item which prevents the examiner from conducting any comparisons.~~

**Statements Not Approved for Use in Laboratory Reports and Expert Witness Testimony Regarding Forensic Examination of Footwear and Tire Impression Evidence**

~~The following are not approved for use by the examiner; however, it is acknowledged that there may be circumstances outside the control of the examiner, such as in courts of law, that require the examiner to deviate from the statements set forth below.~~

**Comment [IP8]:** This statement is not in any of the other proposed ULTRs

**Exclusion of All ~~of~~ Others**

1. The examiner should not state or imply ~~may not state~~ that a shoe/tire is the source of a questioned impression to the exclusion of all other shoes/tires.
2. The examiner should not state or imply that a questioned impression ~~came~~could have come from a particular source unless the examiner also states that the number of possible sources for a specific impression is unknown.~~because all other shoes/tires have not been examined. Examining all of the shoes/tires in the world is a practical impossibility~~.

**Comment [IP9]:** This is a good example of the adaptation of the Type I Error language from FBI hair microscopy review

**Statistical Weight**

3. The examiner ~~may not state~~ should not state or imply a statistical weight or probability to a conclusion or provide a likelihood or statement of rareness suggesting that the questioned impression originated from a particular source.
4. The examiner should not cite the number of cases or analyses worked in the lab and the number of impressions from different materials that are similar to one another as a predictive value to bolster the conclusion that a shoe/tire impression came from a particular source.
~~numerical value or probability associated with his/her opinion. Accurate and reliable data and/or statistical models do not currently exist for making quantitative determinations regarding the forensic examination of footwear/tire impression evidence~~.

**Comment [IP10]:** This is a good example of the adaptation of the Type II Error language from FBI hair microscopy review

**Comment [IP11]:** This addition incorporates the Type III Error language from the FBI hair microscopy review

**Zero Error Rate**

5. The examiner ~~may not state~~ should not state or imply that the method used ~~a numerical value or percentage regarding the error rate associated with either the methodology used~~ to conduct the examinations or the examiner who conducted the analyses has a zero error rate or is infallible.



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# FW: FATM subcommittee standard of "source conclusions and criteria"

**From:** "Kaye, David" <(b) (6)@dsl.psu.edu>
**To:** "Hunt, Ted (ODAG)" <(b) (6)
**Date** Sun, 27 Aug 2017 13 26 00 0400
**Attachments:** FATM-SrcConcs&Crit-170505-LRC-170827.docx (81.3 kB)

Hi all,
I am attaching a draft set of comments on the FATM subcommittee's pre-SDO standard for "source conclusions and criteria." It took an extra week to complete because it incorporates (as an appendix) a memorandum on legal developments regarding firearms identifications. The memorandum includes a section on the PCAST report. I wrote the memorandum to demonstrate the need for the subcommittee and the SAC to address the comments carefully. Please submit any proposed amendments **by Wednesday afternoon** so I can consider them before putting a final version on Kavi for a ballot that night.
Thanks,
David
P.S., Nearly 40% of the committee has not voted on the comments on the training standard. Polls close tomorrow.

# FW: FATM subcommittee standard of "source conclusions and criteria"

**From:** [redacted] (OGC) (FBI)" [redacted]
**To:** "Hunt, Ted (ODAG)" <[redacted]
**Date** Wed, 30 Aug 2017 10 13 05 0400
**Attachments:** FATM-SrcConcs&Crit-170505-LRC-170827.docx (81.3 kB)

**From:** Kaye, David [redacted] @dsl.psu.edu]
**Sent** Sunday, August 27 2017 12 58 PM
**To:** Barry Scheck <[redacted] @innocenceproject.org>; Christine Funk <[redacted] @christinefunk.net>; Christopher Plourd [redacted] @imperial courts ca gov ; Dick Reeve ([redacted] @da18 state co us) <[redacted] @da18.state.co.us>; Dick Reeve [redacted] @rmrcfl net) <[redacted] @rmrcfl.net>; Jennifer Friedman [redacted] @pubdef lacounty gov ; John Ellis [redacted] @fd org ; Kaye, David [redacted] @dsl psu edu ; Kent Cattani <[redacted] @appeals az gov>; Lynn Garcia <[redacted] @fsc.texas.gov>; Ron Reinstein <[redacted] @courts.az.gov>; [redacted] (OGC) (FBI) [redacted]
**Subject:** FATM subcommittee standard of "source conclusions and criteria"

Duplicative Material

# RE: FRE Conference on Forensics Materials

**From:** "Antell, Kira M. (OLP)" <(b) (6)
**To:** "Goodhand, David (CRM)" <(b) (6) >, "Young, Cynthia (USAMA)" <(b) (6) "Wroblewski, Jonathan (CRM)" <(b) (6) >, "Hafer, Zachary (USAMA)" (b) (6) , "Hunt, Ted (ODAG)" (b) (6) "Ibrahim, Anitha (CRM)" <(b) (6) >, "Smith, David L. (USAEO)" <(b) (6) >, "Shapiro, Elizabeth (CIV)" <(b) (6) >, "Isenberg, Alice R. (LD) (FBI)" (b)(6), (b)(7)(C), (b)(7)(E) per FBI
**Cc:** "Morrissey, Brian (OAG)" <(b) (6) >, "Crytzer, Katherine (OLP)" <(b) (6) >, "Newman, Ryan (OLP)" <(b) (6) >, (b)(6), (b)(7)(C), (b)(7)(E) per FBI (OGC) (FBI)" (b)(6), (b)(7)(C), (b)(7)(E) per FBI , "Gold mith, Andrew (ODAG)" (b) (6) "Thiemann, Robyn (OLP)" <(b) (6) >, "Hur, Robert (ODAG)" <(b) (6)
**Date** Fri, 20 Oct 2017 11 52 57 0400
**Attachments:** Lander Presentation_NCFS Meeting 12_EXCERPT.docx (35.03 kB); 4 lander pre entation day1 e ion2 pdf (417 26 kB)

Good morning,

Some of you have asked what arguments I anticipate from the other FRE conference panelists. Those of you who are less familiar with these issues may find it helpful to review a presentation by Eric Lander, chair of PCAST, from a meeting of the National Commi ion on Foren ic Science in January 2017 I have attached an edited tran cript from that meeting (portions are highlighted to reflect Lander's likely arguments), his PPT slides, and a link to a video for those who want to see his presenting style (part 4 of the videos here: https://www.nist.gov/topics/forensic-science/ncfs-meeting-12-webcast).

I flag one thing in the tran cript (b) (5)

I look forward to our moot next week.

Thank ,
Kira

Original Appointment
**From:** Antell, Kira M. (OLP)
**Sent** Tuesday, October 17, 2017 4 06 PM
**To:** Antell, Kira M. (OLP); Goodhand, David (CRM); Young, Cynthia (USAMA); Wroblewski, Jonathan (CRM); Hafer, Zachary (USAMA); Hunt, Ted (ODAG); Ibrahim, Anitha (CRM); Smith, David L (USAEO); Hur, Robert (ODAG); Shapiro, Elizabeth (CIV); Isenberg, Alice R. (LD) (FBI)
**Cc** Morrissey, Brian (OAG); Crytzer, Katherine (OLP); Newman, Ryan (OLP); (b)(6), (b)(7)(C) per FBI (OGC) (FBI); Goldsmith, Andrew (ODAG); Thiemann, Robyn (OLP)
**Subject** FRE Conference on Forensics Moot #2
**When:** Tuesday, October 24, 2017 2:00 PM-3:30 PM (UTC-05:00) Eastern Time (US & Canada).
**Where** OLP Conference Room 4525 and Conference Line (b) (6) /Passcode (b) (6) #

# Forensic Science in the Criminal Courts: Ensuring Scientific Validity Of Feature-Comparison Methods

# PCAST

***PCAST makes policy recommendations in the many areas where understanding of science, technology, and innovation is key to strengthening our economy and forming policy that works for the American people.***

**39 Reports at the request of the President (2 classified)**

- Health
  - Systems engineering for healthcare
  - Drug discovery and development
  - Health information technology
  - Pandemic flu vaccines
  - H1N1
  - Antibiotic resistance
  - Hearing technologies
- Environment & Energy
  - Climate change
  - Ecosystems and economy
  - Energy technologies
- U.S. Research Enterprise
- Advanced Manufacturing
- Semiconductors
- Information Technology
  - Privacy
  - Cybersecurity
  - Spectrum
  - Networking and IT R&D
- Education
  - Massively open online courseware
  - Tech and Training for middle skill workers
  - K-12 STEM education
  - Undergraduate STEM education
- Forensic Science
- Nanotechnology
- Agriculture

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Assistant to the President for Science and Technology

**Eric S. Lander**
President, Broad Institute of Harvard and MIT

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Computer Science, Integrative Biology, Astrophysics

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Vice President National Academy of Engineering (former)

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Univ Maryland , Environment, Economics, Public Policy

**S. James Gates, Jr.**
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Physics, String Theory, Particle Theory

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Kaiser Permanente School of Medicine
Planning Dean, Gerontology

**Mark Gorenberg**
Zetta Venture Partners

**Susan L. Graham**
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**Ed Penhoet**
Alta Partners
Univ California, Berkeley (emeritus)
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Chemistry, Nanotechnology

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Chemistry, Biochemistry, Atmospheric Sciences

**Daniel Schrag**
Harvard University Center for Environment
Geology, Environmental Science, Engineering

**Michael McQuade**
United Technologies Corporation
Senior VP for Science and Technology

**Barbara Schaal**
Washington University of St. Louis,
Dean of Faculty of Arts and Sciences, Biology
Vice-President, National Academy of Science (former)

**Craig Mundie**
Microsoft, Chief Strategy Officer (retired)

# PCAST Report

**Timeline:**

| | |
|---|---|
| **Begun** | **Sept 2015** |
| **Unanimously Approved** | **Sept 1 2016** |
| **Publically Released** | **Sept 20, 2016** |
| **Addendum Approved** | **January 6, 2017** |

**Process: Interviews and input from:**

- **~85 experts (mostly forensic scientists (8 from FBI Lab), statisticians, judges, etc.)**
- **~70 extensive public comments**
- **~2100 scientific papers suggested and reviewed by PCAST**

**Report:**

**173 pages with 399 footnotes (plus 9-page addendum)**

**Recommendations to NIST, OSTP, FBI Lab, DOJ, Federal Judges**

# PCAST Report: Main Message

1. Report considers only (i) forensic feature-comparison methods and (ii) expert testimony in court.

   ***Does not pertain to investigations***

2. **Federal Law imposes a threshold requirement**: Expert testimony may only be admitted in court if it is based on methods that are **"reliable" and "scientifically valid"** (*F.R.E., Daubert*).

   ***Requirement is not "flexible"***

3. A forensic feature-comparison method cannot be established as "reliable" **unless the method itself has been empirically tested** to assess its degree of reliability.

4. *Some* important forensic feature-comparison methods have **never been subjected to meaningful empirical testing** to assess their reliability.

# Good practices can't establish reliability of methods

Many practices are **valuable and important** in forensic disciplines

- professional organizations, certification, accreditation
- training programs
- best practices manuals
- extensive experience by examiners
- papers in peer-reviewed journals

**However, *none* of these practices can establish in any way that a method is reliable or scientifically valid**

**-- because they don't actually test the method**

# Seven feature-comparison methods evaluated

1. **DNA analysis of single-source and simple-mixture samples**
2. **DNA analysis of complex-mixture samples**
3. **Bitemark analysis**
4. **Latent fingerprint analysis**
5. **Firearms analysis**
6. **Footwear impression analysis**
7. **Microscopic hair comparison**

Key issues

- In 2 cases, clear empirical tests establish reliability and validity
- In 3 cases, no empirical tests *whatsoever*
- In 1 case, only *one* empirical test properly designed to assess reliability
- In 1 case, issue is the *range* within which reliability has been established

# What is needed

**Threshold issue of admissibility: Establish Reliability**

- **Black-box tests** for subjective methods not yet established as reliable and scientifically valid

**Major improvement**

- **White-box studies,** to understand and improve the methods
- **Technology development,** to convert subjective method to objective methods

**Additional**

- **Research aimed at incremental improvements**
- **Development of standards and best practices**

# PCAST Recommendations

1. **NIST should conduct ongoing evaluations** of validity and reliability of forensic science methods.

2. **NIST (in partnership with others) should help move methods from subjective to objective** (e.g., fingerprints, firearms).

3. **NIST should improve OSAC standards-development process** (forensic working groups) by adding a committee of independent scientists and statisticians.

4. **OSTP should lead development of a national research strategy**.

5. **FBI should undertake various scientific studies and receive increased funding**.

6. **Attorney General should ensure that DOJ uses scientifically valid evidence**.

7. **DOJ should withdraw and reissue its guidelines on testimony** (which forbid examiners from providing empirical evidence about accuracy).

8. **Judges should "take account" of the scientific criteria for scientific validity**.

# Forensic Science in the Criminal Courts: Ensuring Scientific Validity Of Feature-Comparison Methods