# Forensic Science and Forensic Evidence I

**January**
**2017**
**Volume 65**
**Number 1**

United States
Department of Justice
Executive Office for
United States Attorneys
Washington, DC
20530

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Director

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The United States Attorneys' Bulletin is published pursuant to
28 C F R § 0 22(b)

The United States Attorneys' Bulletin is published bimonthly by the Executive Office for United States Attorneys, Office of Legal Education,
1620 Pendleton Street,
Columbia, South Carolina 29201

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United States Attorneys' Bulletin,
National Advocacy Center,
Office of Legal Education,
1620 Pendleton Street,
Columbia, SC 29201

Cite as:
65 U S Attorneys' Bulletin, Jan 2017

## In This Issue

# Introduction

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Forensic science plays a crucial role in our criminal justice system. Using the tiniest shreds of evidence, whether a drop of blood or a shell casing found at the scene, forensic scientists can help investigators learn who committed a crime and how it was committed. Judges and juries put great stock in this type of forensic testimony, and when presented at trial, such evidence can make the difference between conviction and acquittal.

But it is precisely because forensic evidence can be so powerful and so persuasive that we must be careful in how it is used. Even in the most advanced forensic disciplines, there are limits on what the science can reveal. In recent years, for example, we have seen the risks that forensic science presents, as we learned that certain experts have overstated the strength of the evidence in their lab reports and at trial. These errors have not simply called into question the validity of individual prosecutions, but also threatened to undermine the public's confidence in forensic science more broadly.

To address this, the Department of Justice has taken a number of steps to strengthen forensic science. In 2013, the Department partnered with the National Institute of Standards and Technology to establish the National Commission on Forensic Science (NCFS), a federal advisory committee that makes forward-looking policy recommendations to the Attorney General on forensic science topics. As Deputy Attorney General, I have had the privilege of serving as the Co-Chair of NCFS, which has developed a number of significant proposals on the practice of forensic science in both the laboratory and the courtroom. In addition, in early 2016, the Department recruited Dr. Victor Weedn to help develop new policies and guidance across DOJ's investigative agencies, research offices, and litigating components. Dr. Weedn, who serves as the chairman of the department of forensic science at George Washington University and recently completed a term as the president of the American Academy of Forensic Sciences, has spearheaded a number of important initiatives during his time at Main Justice and helped coordinate this issue of *USA Bulletin*.

One of the Department's most significant ongoing projects in this area is the multi-year development of the "Uniform Language for Testimony and Reports," or ULTRs. Once finalized, the ULTRs will outline the specific statements that the Department's forensic experts may – and may not – make when testifying in court about their scientific conclusions, thus limiting the risk of experts overstating the accuracy or reliability of a particular forensic technique. We expect that the guidance contained in the ULTRs will also prove useful for prosecutors, who will be able to rely on the documents to ensure that they properly characterize their forensic evidence in *Daubert* hearings, witness

examinations, and jury summations. The Department's Office of Legal Policy, along with experts at FBI, ATF, and DEA, remains hard at work on the project. Draft versions of the ULTRs were posted for public comment in mid-2016, and final versions are likely to be published later this year.

As you read through this issue of the *USA Bulletin*, you'll see the many ways forensic science impacts federal prosecutions, from investigations on the internet to theft of historical artifacts. I hope you find the material informative and that it provides an opportunity to learn more about the important work underway across the Department to strengthen the practice of forensic science.

# Recent Developments in the Forensic Sciences

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## I. Introduction

Forensic science is generally dated to Hans Gross' *Handbuch für Untersuchungsrichter, Polizeibeamte, Gendarmen* (*Handbook for Magistrates, police officials, military policemen*), which was published in 1893, although forensic medicine and forensic toxicology are much older. Edmond Locard established the first crime laboratory in 1910 in Lyon, France. Depending on who is to be believed, the first crime laboratory in the United States was established in Los Angeles or Berkeley, California, in 1923. The FBI laboratory was established in 1932. Throughout the first half of the twentieth century, forensic science laboratories were established throughout the United States. Although the International Association for Identification has origins dating back to 1915, most professional forensic science associations were established during the second half of the century. Initial efforts towards standardization in the field soon followed. Perhaps more importantly, gas chromatography-mass spectrometers (GC-MS) were not in widespread use until the 1970s, and genetic analyzers were not in widespread use until the 1990s. Both are the basic laboratory instruments of modern crime labs. The television show *CSI* captured the attention of the public when it first aired in 2000. Particularly with the rise of databases (fingerprints, DNA, firearms), forensic science laboratories became increasingly powerful and increasingly important to the criminal justice system. The criminal justice system has had to adapt to this new reality; for instance, in addition to appeals based upon unfair process, actual innocence became a basis for appeals in DNA prosecutions. In this article, I will discuss some major developments in forensic science policy over the past several years.

## II. 2009 National Academies of Sciences (NAS) Report

In February of 2009, shortly after President Obama took office, the National Research Council (NRC) of the National Academies of Science (NAS), supported by National Institute of Justice (NIJ) funding, published its influential report, *Strengthening Forensic Science in the United States: A Path Forward*. NAT'L ACAD. OF SCI., NAT'L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009). The 2009 NAS Report on forensic science was not the first call for forensic science reform in America, but one that captured the attention of policymakers. Judge Harry T. Edwards and statistician Constantine Gatsonis, co-Chairs, speaking for their committee, concluded:

> The forensic science system, encompassing both research and practice, has serious problems that can only be addressed by a national commitment to overhaul the current structure that supports the forensic science community in this country. This can only be done with effective leadership at the highest levels of both federal and state governments, pursuant to national standards, and with a significant infusion of federal funds.

*Id*. at *xx*

The NAS Report made 13 recommendations (paraphrased here):

1. Create a National Institute of Forensic Sciences (NIFS);
2. Standardize terminology and reporting practices;
3. Expand research on the accuracy, reliability, and validity of the forensic sciences;
4. Remove forensic science services from the administrative control of law enforcement agencies and prosecutors' offices;
5. Support forensic science research on human observer bias and sources of error;
6. Develop tools for advancing measurement, validation, reliability, information sharing, and proficiency testing, and to establish protocols for examinations, methods, and practices;
7. Require the mandatory accreditation of all forensic laboratories and certification for all forensic science practitioners;
8. Laboratories should establish routine quality assurance procedures;
9. Establish a national code of ethics with a mechanism for enforcement;
10. Support higher education in the form of forensic science graduate programs, to include scholarships and fellowships;
11. Improve the medico-legal death investigation system;
12. Support Automated Fingerprint Identification System interoperability through developing standards; and
13. Support the use of forensic science in homeland security

The NAS Report has been referred to by many courts and was quoted by Justice Scalia in *Melendez-Diaz v. Massachusetts*, 557 U.S. 305 (2009) "to refute the suggestion that this category of evidence is uniquely reliable," but Justice Kennedy in his dissent writes:

> State legislatures, and not the Members of this Court, have the authority to shape the rules of evidence. The Court therefore errs when it relies in such great measure on the recent report of the National Academy of Sciences. *Ante*, at 12–14 (discussing National Research Council of the National Academies, Strengthening Forensic Science in the United States: A Path Forward (Prepublication Copy Feb. 2009)). That report is not directed to this Court, but rather to the elected representatives in Congress and the state legislatures, who, unlike Members of this Court, have the power and competence to

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