

**STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES:  
A PATH FORWARD**

Statement of

Peter M. Marone  
Director, Virginia Department of Forensic Science

before the

Subcommittee on Crime, Terrorism and Homeland Security  
Judiciary Committee  
U.S. House of Representatives

May 13, 2009

Good morning, Mr. Chairman and members of the Committee. My name is Pete Marone. I am Director of the Commonwealth of Virginia's Department of Forensic Science. The NRC study was sponsored by the National Institute of Justice at the request of the Senate Appropriations Committee. This study, as you know, was requested by Congress at the urging of the Crime Lab Community itself.

In my testimony today in the interest of time, I will simplify, the report—*Strengthening Forensic Science in the United States: A Path Forward*—into the scientific and technical challenges that must be met in order for the forensic science community in the United States to operate to its full potential. Specifically, I will discuss these challenges in four classes of resources, research, standardization, and education. These are the primary challenges for our community at this time. The report found that some of this work has already been begun by forensic scientists, but that additional effort and coordination are needed to carry it through. However, to make that an effective effort, an annual assessment, an actual requirements analysis if you will, is needed to set forth a valid national strategy. In the past, federal strategy to help State and Local Forensic Service providers has been determined by political factors and not hard data. We need to roll up our sleeves and determine the specific needs on an annual basis.

The first element of the charge, while not specifically addressed in the form of a recommendation, was clearly addressed in the report, “for the state and local laboratories there has been a lack of resources (money, staff, training, and equipment) necessary to

promote and maintain strong forensic science laboratory systems.” As I know you are acutely aware, many states are in a fiscal crisis. As a State Crime Lab Director, I know that this has in fact been the situation for many of us for some time. As such, the State and local crime labs, as well as the Medical Examiner community, have not been receiving the support they need, but the caseloads have been increasing exponentially. If we continue to focus solely on backlog rather than the actual capacity of a lab to process its workload we will continually have a backlog. Further, the funding from the Federal government has been focused overwhelmingly on the discipline of DNA, which is not our largest caseload. Congress has consistently put some funding in for the other disciplines, but it falls far short of what is necessary. I want to make it clear, Mr. Chairman, that this is at the root of many of our issues and, speaking as a laboratory director, I am asking Congress to please establish funding in at an adequate level for all of forensic science, not just a single discipline, but not instead of that discipline (DNA). The amount of funding to accomplish this is probably the most difficult to estimate since we do not have an accurate number of forensic service providers (laboratories and police identification sections) and the instrumentation and facilities involved are equally difficult to ascertain the conditions and needs. . There are over 17,000 police and sheriff departments and we have roughly estimated that there may be 11,000 forensic service providers in those departments in addition to the 400+ publicly funded laboratories. All of these numbers need to be verified and understood.

Under the category of research, the report determined that some of the forensic science disciplines need further research to provide the proper underlying validation for some of the methods in common use and to provide the basis for more precise statements

about their reliability and precision. However, “not validated” by one manner or another does not mean “of no value”. The report clearly states that there is value in many of the disciplines addressed. But as the forensic community has been stating for more than a decade, in order to accomplish this, we need more funding for research and a stronger, broader research base. The disciplines based on biological or chemical analysis, such as toxicology, drug analysis, and some trace evidence sub-disciplines such as explosives, fire debris, polymers to include paint and fiber analysis, are generally well-validated and should not be included in the same category as the experience-based disciplines, such as fingerprints, firearms and toolmarks, and other pattern-recognition types of analysis. We need studies, for instance, that look at large populations of fingerprints and toolmarks so as to quantify how many sources might share similar features. In addition to investigating the limits of the techniques themselves, research is also needed on the issues of context effect and examiner bias.

In the realm of standardization, the report raised concerns about the lack of mandatory requirements for professional certification and for laboratory accreditation and the variability in the way forensic science results are reported in courts. I think it is critical to first understand that most in the forensic science laboratory community have already begun to move in the direction of accreditation; in fact the recently published *Census of Publicly Funded Crime Laboratories, 2005* stated that by 2005, 82% of the public laboratories were accredited. That number is even higher today. But more can be done. There are a significant number of forensic service providers (police ID sections) which need to be notified of the existence of accreditation programs which are

appropriate for their functions. Few realize that the existing ISO/IEC 17025 standards are applicable. Each policy and method in these police departments must be reviewed to determine if it is in compliance and, if not, what must be done to bring it into compliance. This process may take a few years due to the sheer number of labs. That is not to say that the work done by these units is suspect during the process, but that the standards and criteria are quite specific. The community fully supports mandatory accreditation, but we do not believe one needs to reinvent the wheel. Utilize the programs already in place.

The report also calls for certification of individuals that is based on written examinations, supervised practice, proficiency testing, and adherence to a code of professional practice. There are already many recognized certifying bodies and very many certified individuals, voluntarily. These certification programs need to be supported in order for them to be able to expand.

Lastly, the NRC report stresses the need for establishing a robust educational component. The federal government needs to support such a program and the institutions applying to the program for accreditation. The example for accreditation of forensic science educational programs would be the Forensic Education Program Accreditation Commission (FEPAC), which is a standing committee of the American Academy of Forensic Sciences. While this Commission has been in existence for just five years, it has shown significant success in raising the scientific rigor of the programs which it has already accredited. This also applies to laboratory accreditation and individual certification. There is a quantum difference between overseeing the accrediting or

certifying bodies and creating a new body from the ground up. The report did not intend to establish a new accreditation program, but to bolster the existing structure.

The report's primary recommendation is that the forensic science enterprise does not have a unified plan and needs strong, fresh national direction. Strong leadership is needed to adopt and promote an aggressive, long-term agenda to strengthen forensic science. It also strongly urges Congress to establish a new, independent National Institute of Forensic Science to lead research efforts, establish and enforce standards for forensic science professionals and laboratories, and oversee education standards. While the difficulty with establishing a new agency is recognized, the root of the struggles this community has, is the lack of federal support and unified guidance.

The report also calls on this new entity to lead an effort to remove public forensic laboratories from the administrative control of law enforcement agencies or prosecutors' offices, or be autonomous within such agencies such that scientific decisions and technical policies are made by the scientists. That is likely to be a difficult task, one that requires knowledge of relationships among those operations and between federal, state, and local jurisdictions. It is critical for us to remember that forensic science is indeed a tool for the criminal justice system and that the science must be objective.

Mr. Chairman and Members of the Committee, I thank you for the opportunity to come before you today. I'd like to conclude by quoting a part of the NRC study which I believe is one of the most important statements and findings:

“Numerous professionals in the forensic science community and the medical examiner system have worked for years to achieve excellence in their fields, aiming to follow high ethical norms, develop sound professional standards, ensure accurate results in their practices, and improve the processes by which accuracy is determined. Although the work of these dedicated professionals has resulted in significant progress in the forensic science disciplines in recent decades, major challenges still face the forensic science community.”  
Again, thank you for your attention, and I will be pleased to answer questions.

Below are excerpts from the NRC report, specifically speaking to the three disciplines which received the most attention:

Chapter 5-page 12

**“Summary Assessment** Historically, friction ridge analysis has served as a valuable tool, both to identify the guilty and to exclude the innocent. Because of the amount of detail available in friction ridges, it seems plausible that a careful comparison of two impressions can accurately discern whether or not they had a common source. Although there is limited information about the accuracy and reliability of friction ridge analyses, claims that these analyses have zero error rates are not scientifically plausible.”

Chapter 5-page 21

**“Summary Assessment** Because not enough is known about the variabilities among individual tools and guns, we are not able to specify how many points of similarity are necessary for a given level of confidence in the result. Sufficient studies have not been done

to understand the reliability and repeatability of the methods. The committee agrees that class characteristics are helpful in narrowing the pool of tools that may have left a distinctive mark. Individual patterns from manufacture or from wear might, in some cases, be distinctive enough to suggest one particular source, but additional studies should be performed to make the process of individualization more precise and repeatable.”

Chapter 5- page 30

**“Summary Assessment** The scientific basis for handwriting comparisons needs to be strengthened.<sup>98</sup> Recent studies have increased our understanding of the individuality and consistency of handwriting and computer studies<sup>99</sup> and suggest that there may be a scientific basis for handwriting comparison, at least in the absence of intentional obfuscation or forgery. Although there has been only limited research to quantify the reliability and replicability of the practices used by trained document examiners, the committee agrees that there may be some value in handwriting analysis.”